

ALAGAPPA UNIVERSITY



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KARAIKUDI – 630 003

DIRECTORATE OF DISTANCE EDUCATION

M.A. (ECONOMICS)

Second Year – Third Semester

362 31 – MACRO ECONOMICS-I

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SYLLABUS

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BLOCK I: INTRODUCTION TO MACRO ECONOMICS

UNIT-1: INTRODUCTION

Structure:

1.1. Introduction

I .Subject Matter of Economics

What is Economics?

Economics studies the allocation of scarce resources among people – examining what goods and services wind up in the hands of which people. Why scarce resources? Absent scarcity, there is no significant allocation issue. All practical, and many impractical, means of allocating scarce resources are studied by economists. Markets are an important means of allocating resources, so economists study markets. Markets include stock markets like the New York Stock Exchange, commodities markets like the Chicago Mercantile, but also farmer‘s markets, auction markets like Christie‘s or Sotheby‘s (made famous in movies by people scratching their noses and inadvertently purchasing a Ming vase) or eBay, or more ephemeral markets, such as the market for music CDs in your neighborhood. In addition, goods and services (which are scarce resources) are allocated by governments, using taxation as a means of acquiring the items.

1.2.Objectives

After going through the unit you will be able to

- Understand the various scope of macro economics.
- Discuss the importance of macro economics
- Differentiate the micro and macro economics

1.3 Meaning

Governments may be controlled by a political process, and the study of allocation by the politics, which is known as political economy, is a significant branch of economics. Goods are allocated by certain means, like theft, deemed illegal by the government, and such allocation methods nevertheless fall within the domain of economic analysis; the market for marijuana remains vibrant despite interdiction by the governments of most nations. Other allocation methods include gifts and charity, lotteries and gambling, and cooperative societies and clubs, all of which are studied by economists.

Some markets involve a physical marketplace. Traders on the Bombay Stock Exchange get together in a trading pit. Traders on eBay come together in an electronic marketplace. Other markets, which are more familiar to most of us, involve physical stores that may or may not be next door to each other, and customers who search among the stores, purchasing when the customer finds an appropriate item at an acceptable price. When we buy bananas, we don‘t typically go to a banana market and purchase from one of a dozen or more banana sellers, but instead go to a grocery store. Nevertheless, in buying bananas, the grocery stores compete in a market for our banana patronage, attempting to attract customers to their stores and inducing them to purchase bananas. Price – exchange of goods and services for money – is an important allocation means, but price is hardly the only factor even in market exchanges. Other terms, such as convenience, credit terms, reliability, and trustworthiness are also valuable to the participants in a transaction.

We may also define Economics as the study of how people choose to use resources. Resources include the time and talent people have available, the land, buildings, equipment, and other tools on hand, and the knowledge of how to combine them to create useful products and services. Important choices involve how much time to devote to work, to school, and to leisure, how many dollars to spend and how many to save, how to combine resources to produce goods and services, and how to vote and shape the level of taxes and the role of government.

Often, people appear to use their resources to improve their well-being. Well-being includes the satisfaction people gain from the products and services they choose to consume, from their time spent in leisure and with family and community as well as in jobs, and the security and services provided by effective governments. Sometimes, however, people appear to use their resources in ways that don't improve their well-being.

In short, economics includes the study of labor, land, and investments, of money, income, and production, and of taxes and government expenditures. Economists seek to measure well-being, to learn how well-being may increase over time, and to evaluate the well-being of the rich and the poor. The most famous book in economics is the *Inquiry into the Nature and Causes of The Wealth of Nations* written by Adam Smith, and published in 1776 in Scotland.

1.4.Definitions

There is a difference of opinion among economists regarding the

subject-matter of economics. Adam Smith, the father of modern economic theory, defined economics as a subject, which is mainly concerned with the study of nature and causes of generation of wealth of nation.

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Marshall introduced the concept of welfare in the study of economics. According to Marshall; economics is a study of mankind in the ordinary business of life. It examines that part of individual and social actions which is closely connected with the material requisites of well being. In this definition, Marshall has shifted the emphasis from wealth to man. He gives primary importance to man and secondary importance to wealth.

The Robbinsian‘s concept of the subject-matter of economics is that: ‖economics is a science which studies human behavior as a relationship between ends and scarce means which have alternative uses‖. According to Robbins (a) human wants are unlimited (b) means at his disposal to satisfy these wants are not only limited, (c) but have alternative uses. Man is always busy in adjusting his limited resources for the satisfaction of unlimited ends. The problems that centre round such activities constitute the subject-matters of economics.

Paul. A. Samuelson, however, includes the dynamic aspects of economics in the subject matter. According to them, ‗economics is the study of how man and society choose with or without money, to employ productive uses to produce various commodities over time and distribute them for consumption now and in future among various people and groups of society‘.

The subject matter of economics has been divided into two parts: microeconomics and macroeconomics. In Microeconomics we study the economic behaviour of an individual, firm or industry in the national economy. It is thus a study of a particular unit rather than all the units combined. We mainly study the following in microeconomics:

1)Product pricing 2) Consumer behaviour 3) Factor pricing 4) Economic conditions of a section of the people 5) Study of a firm and 6) Location of a industry.

In macro economics, we study the economic behaviour of the large aggregates such as the overall conditions of the economy such as total production, total consumption, total saving and total investment in it. It includes: 1) National income and output 2) General price level
3) Balance of trade and payments, 4) External value of money 5) Saving and investment and 6) Employment and economic growth.

The problem of scarcity and choice making can be depicted using the tool of production possibilities curve. The basic economic problems of what, how and for whom to produce can be solved in many ways by an economy. If it gives the whole charge of the economy, to private ownership we get capitalist economy, to public ownership we get socialist economy and jointly to private and public ownership we get mixed economy.
Let us go through some of the formal definitions of Economics.

- Economics is the study of people in the ordinary business of life.‖-- Alfred Marshall(*Principlesof Economics).*
- Economics is the science which studies human behavior as a relationship between given ends and scarce means which have

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alternative uses.‖ -- Lionel Robbins(*An Essay on the Nature and Significance ofEconomic Science)*

- Economics is the ―study of how societies use scarce resources to produce valuable commodities and distribute them among different people.‖ -- Paul A. Samuelson(*Economics*)

1.5. Nature and Scope

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Nature of Economics

Economics is both a science and an art. Economics is considered as a science because it is a systematic knowledge derived from observation, study and experimentation. However, the degree of perfection of economics laws is less compared with the laws of pure sciences.

An art is the practical application of knowledge for achieving definite ends. A science teaches us to know a phenomenon and an art teaches us to do a thing. For example, there is inflation in Pakistan. This information is derived from positive science. The government takes certain fiscal and monetary measures to bring down the general level of prices in the country. The study of these fiscal and monetary measures to bring down inflation makes the subject of economics as an art.

Philosophy of Economics

The philosophy of economics concerns itself with conceptual, methodological, and ethical issues that arise within the scientific discipline of economics.

Philosophical reflection on economics is ancient, but the conception of the economy as a distinct object of study dates back only to the 18th century. Aristotle addresses some problems that most would recognize as pertaining to economics mainly as problems concerning how to manage a household. Scholastic philosophers addressed ethical questions concerning economic behaviour, and they condemned usury - that is, the taking of interest on money. With the increasing importance of trade and of nation-states in the early modern period, ‗mercantilist'philosophers and pamphleteers addressed questions concerning the balance of trade and the regulation of the currency. There was an increasing recognition of the complexities of the financial management of the state and of the possibility that the way that the state taxed and acted influenced the production of wealth.

In the early modern period, those who reflected on the sources of a country's wealth recognized that the annual harvest, the quantities of goods manufactured, and the products of mines and fisheries depend on facts about nature, individual labour and enterprise, and state and social regulations. Trade also seemed advantageous, at least if the terms were good enough. It took no conceptual leap to recognize that manufacturing and farming could be improved and that some taxes and tariffs might be less harmful to productive activities than others. But to formulate the idea that there is such a thing as ―the economy‖ with regularities that can be investigated requires a bold further step. In order for there to be an object of inquiry, there must be regularities in production and exchange; and for the inquiry to be non- trivial, these regularities must go beyond what is obvious to the producers, consumers, and exchangers themselves. Only in the eighteenth century, most clearly illustrated by the work of Cantillon (1755), the

physiocrats, David Hume, and especially Adam Smith, does one find the idea that there are laws to be discovered that govern the complex set of interactions that produce and distribute consumption goods and the resources and tools that produce them.

Crucial to the possibility of a social object of scientific inquiry is the idea of tracing out the unintended consequences of the actions of individuals. Thus, for example, Hume traces the rise in prices and the temporary increase in economic activity that follow an increase in currency to the perceptions and actions of individuals who first spend the additional currency (1752). In spending their additional gold imported from abroad, traders do not intend to increase the price level. But that is what they do nevertheless. Adam Smith expands and perfects this insight and offers a systematic Inquiry into the Nature and Causes of the Wealth of Nations. From his account of the demise of feudalism to his famous discussion of the invisible hand, Smith emphasizes unintended consequences.

One can distinguish the domain of economics from the domain of other social scientific inquiries either by specifying some set of causal factors or by specifying some range of phenomena. But since so many different causal factors are relevant to the study of production or consumption, from the laws of thermodynamics and metallurgy to the laws governing digestion, economics cannot be distinguished from other inquiries only by the phenomena it studies. Some reference to a set of central causal factors is needed. Thus, for example, John Stuart Mill maintained that, ―Political economy is concerned with such of the phenomena of the social state as take place in consequence of the pursuit of wealth. It makes entire abstraction of every other human passion or motive, except those which may be regarded as perpetually antagonising principles to the desire of wealth, namely aversion to labour, and desire of the present enjoyment of costly indulgences.‖ Economics is mainly concerned with the consequences of individual pursuit of wealth, though it takes some account of less significant motives such as aversion to labour.

Mill takes it for granted that individuals act rationally in their pursuit of wealth and luxury and avoidance of labour, rather than in a disjointed or erratic way, but since he does not have a theory of consumption, he develops no explicit theory of rational economic choice. Such theories were developed only in the wake of the so- called neoclassical revolution, which linked choice (and price) of some object of consumption not to its total utility but to its marginal utility. For example, nothing could be more useful than water. But in much of the world water is plentiful enough that another glass more or less matters little to an agent. So water is cheap. Early ―neoclassical‖ economists such as Jevons held that agents make consumption choices so as to maximize their own happiness (1871). This implies that they distribute their expenditures so that a dollar's worth of water or porridge or upholstery makes the same contribution to their happiness. The ―marginal utility‖ of a dollar's worth of each good is the same.

In the Twentieth Century, economists stripped this general theory of rationality of its hedonistic clothing. Rather than supposing that all consumption choices can be ranked in terms of the extent to which they promote an agent's happiness, economists focused on the ranking itself. All

that they suppose concerning evaluations is that agents are able consistently to rank the alternatives they face. This is equivalent to supposing first that rankings are complete — that is, for any two alternatives x and y, either the agent ranks x above y (prefers x to y), or the agent prefers y to x, or the agent is indifferent. Second, economists suppose that agent's rankings of alternatives (preferences) are transitive. Though there are further technical conditions to extend the theory to infinite sets of alternatives and to capture further plausible rationality conditions concerning gambles, economists generally subscribe to a view of a rational agent as possessing complete and transitive preferences and as choosing among the feasible alternatives whatever he or she most prefers. Attempts have also been made in the theory of revealed preference to eliminate all reference to subjective preference or to define preference in terms of choices.

In clarifying the view of rationality that characterizes economic agents, economists have for the most part continued to distinguish economics from other social inquiries by the content of the motives or preferences with which it is concerned. So even though an agent may for example seek happiness through asceticism or may rationally prefer to sacrifice all his or her worldly goods to a political cause, economists have supposed that such preferences are rare and unimportant to economics. What economists are concerned with are the phenomena deriving not just from rationality, but from rationality coupled with a desire for wealth and larger consumption bundles.

Economists have flirted with a less substantive characterization of individual motivation and with a more expansive view of the domain of economics. In his influential monograph, An Essay on the Nature and Significance of Economic Science, Lionel Robbins defined economics as ―the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses‖. According to Robbins, economics is not concerned with production, exchange, distribution, or consumption as such. It is instead concerned with an aspect of all human action. Although Robbins' definition helps one to understand efforts to apply economic concepts, models, and techniques to other subject matters such as the analysis of voting behaviour and legislation, it seems evident that economics maintains its connection to a traditional domain.

Economics has been of philosophical interest in three main regards. First, it raises moral questions concerning freedom, social welfare and justice. Although economists often deny that their theories have ethical content, they are ready with advice about how to make life better. Markets, which are the central institutions with which economics traditionally has been concerned, involve voluntary interactions, yet they are simultaneously mechanisms that regulate individual activities and allocate goods to people. They thus raise intricate moral questions concerning coercion, voluntary action, and social justice.

Second, contemporary theoretical economics is largely a theory of rational choice. This may seem surprising, since economics is supposed to be an explanatory and predictive science of the actual interactions among people rather than a normative discipline studying how people ought rationally to choose, but it is indeed a fact. This fact joins the interests of economists to the interests of those philosophers concerned with rational

choice.

Third, economics raises important questions in philosophy of science. In part this is because all significant cognitive enterprises raise questions for epistemology or philosophy of science. But orthodox theory is of particular methodological interest for seven reasons.

Positive and normative: The extent to which economics appears to be permeated with normative concerns raises methodological questions about the relationships between a positive science (―of what is‖) and a normative science (―of what ought to be‖). The standard view is that the positive science of economics, like engineering, helps policy makers to choose means to accomplish their ends, but that it has no bearing on the choice of ends itself. This view is questionable, because economists have to interpret and articulate the incomplete specifications of goals and constraints provided by policy makers.

Reasons and causes: It is of philosophical interest that orthodox theoretical economics is as much a theory of rational choices as it a theory that explains and predicts economic outcomes. Although economists are more interested in the aggregate results of individual choices than in the choices themselves, their theories offer both causal explanations for why individuals choose as they do and accounts of the reasons for their choices. Embedded within orthodox economics is a specific variant of ―folk psychology‖, and orthodox economics provides a specific context in which to question whether folk- psychological explanations in terms of reasons can also be causal explanations.

Naturalism: Of all the social sciences, economics most closely resembles the natural sciences. Economic theories have been axiomatized, and essays and books of economics are full of theorems. Of all the social sciences, only economics boasts a Nobel Prize. Economics is thus a test case for those concerned with the extent of the similarities and differences between the natural and social sciences.

Abstraction and idealization: Economics raises questions concerning the legitimacy of severe abstraction and idealization. For example, economic models often stipulate that everyone is perfectly rational and has perfect information or that commodities are infinitely divisible. Such claims are exaggerations, and they are clearly false. Can good science make such false claims?

Ceteris paribus clauses: Because economists attempt to study economic phenomena as constituting a separate domain, influenced only by a small number of causal factors, the claims of economics are true only ceteris paribus -- that is, they are true only if there are no interferences or disturbing causes. What are ceteris paribus clauses, and when if ever are they legitimate in science?

Causation: Many important generalizations in economics make causal claims. For example, the law of demand asserts that a price increase will (ceteris paribus) diminish the quantity demanded. Yet economists are wary of causal language because of its suggestion that outcomes have single causes and because of difficulties integrating talk of causation and talk of equilibrium mutual determination. Econometricians have also been deeply concerned with the possibilities for determining causal relations from

statistical evidence and with the relevance of causal relations to the possibility of consistent estimation of parameter values.

Structure and strategy: During the past generation philosophers of science have been concerned to comprehend the larger theoretical structures that unify and guide research within particular research traditions or research programmes. Since orthodox economics is very systematically unified, though not in quite the way that Kuhn (1970) or Lakatos (1970) discuss, it poses interesting puzzles about what guides research. Since the success of orthodox economics is controversial, this ―research tradition‖ also poses questions about how unified and constrained research ought to be.

These are the seven most significant philosophical issues concerning neoclassical economic theory, and many of these issues arise concerning all schools of economics.

Note: Check your progress -1

a.Write your answer in the space given below.

b.Differentiate between Micro and Macro Economics.

1.5.Importance

II. Discipline of Economics

Fields of Economics

1.6. Importance

Economists organize their discipline in fields from agricultural economics to urban economics. The fields are in two sets: Those that develop core skills and those that emphasize application of the skills in specific settings. The core itself involves two modes of analysis. The Skills page gives simple examples. First, mathematical description of economic phenomena allows derivation of relationships. This mode of thought is called economic theory. Mathematics allows arguing by deductive reasoning from stated premises to a conclusion. It offers the internal consistency of mathematical proofs but requires no evidence of applicability.

The second core method looks for evidence based on observing economic phenomena. It draws inference from persistent patterns. A consistent pattern that is distinct from the complexity and randomness in nature is likely to have meaning. This mode of thought is called inductive reasoning. It is the mode of analysis of economic historians, statisticians, and experimenters. The study of formal methods for drawing inferences from statistical evidence in economics is called econometrics.

The fields of economics, then, are more signposts than fences. They include the core areas of mathematical and statistical methods as well as the many arenas in which the core methods are applied. Most undergraduate Programs include study in the core fields and in a selection of applied fields. The standard classification of economic fields given below appears in the Journal of Economic Literature.

These field labels provide enduring markers on the terrain of

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economic thought.

A). General Economics and Teaching -- The principles course in the economics curriculum develops core ideas. The course also provides the big picture of how individual economic events fit together to shape aggregate outcomes. Mastering basic ideas and getting a sense of how the parts fit into the whole is an essential entry point to the study of other fields and more advanced ideas in economics. The A category also includes discussion of the teaching of economics.

B). Schools of Economic Thought and Methodology -- Economists who study the history of economic thought investigate how the core ideas in economics have developed.

C). Mathematical and Quantitative Methods -- Econometricians develop methods to measure economic phenomena. They apply the scientific method by formulating hypotheses, gathering evidence, and judging whether the evidence is consistent with the hypotheses. Mathematical economists develop tools for finding optimal solutions to economic problems and advance ideas in game theory. Game theory is the method for analyzing how one player chooses strategies in light of knowledge of the possible strategies a rival might choose. Game theory is used to analyze many economic phenomena including the interaction between firms. In recent decades, experimental economists have tested economic theories in laboratories and in the field.

D). Microeconomics -- Studying how markets function and the role of prices is of central concern in understanding economics. Investigation of the behavior of individual households, firms, and prices and quantities of specific products like automobiles is called microeconomics. Behavioral economists study the cognitive and emotional dimensions of economic decisions.

E). Macroeconomics and Monetary Economics -- The actions of individuals sum to the total activity in a whole economy. In the aggregate, the total amount of products consumed by households and firms must equal the total amount produced. The total amount firms pay to workers and investors must equal the amount households receive in income. Study of the aggregate relationships in an economy is called macroeconomics. Economic growth, the role of money and interest rates, and changes in the overall level of prices and the aggregate level of unemployment are central concerns of macroeconomics.

F). International Economics -- International economists study trade among nations and the flow of finance across international borders. Globalization and the deficit in the U.S. balance of payments with other countries are current concerns.

G). Financial Economics -- Financial economists study the process of saving and investing with a specific concern for how individuals and firms deal with risk.

H). Public Economics -- Public finance economists consider the role of government in the economy. Some focus on evaluating government programs and others focus on the design of tax systems. Public finance

economists are also interested in how the political process makes decisions. Issues of national security and defense appear here as well the study of state and local governments.

I). Health, Education, and Welfare -- Some economists focus on the markets and government policies that directly shape access to health care. Others focus on schools and educational policies. Still others consider the economic circumstances of the poor and evaluate alternative government programs to improve the well-being of the poor.

J). Labor and Demographic Economics -- Labor economists study employers‘ decisions to hire workers and employees‘ decisions to work. They study how wages are set, the nature of incentives workers face, and the role of minimum wage laws, unions, pensions plans, and training programs. They are also interested in the formation of families, determinants of birth rates, migration, population change, and aging.

K). Law and Economics -- Some economists use the tools of economics to study the incentives for human behavior that are defined by the legal system. Property rights, for example, are essential for markets to work well but they can be defined in a variety of ways that have different effects on the well-being of people.

L). Industrial Organization -- IO is the study of individual markets, the nature of competition, and the role of prices. Some economists study issues in anti-trust policy. Others study the role of advertising, pricing policies, and how costs vary with the scale of operations. Some IO economists investigate particular industries such as appliances, software, and electricity. In the last decade a number of economists have studied economic issues in sports, recreation, and tourism.

M). Business Administration and Business Economics, Marketing, Accounting --Business economists study decisions made by firms. How do firms maximize profit? What prices should they set and how much should they produce? What is the role of incentives within the firm, of entrepreneurship, and leadership?

N). Economic History -- Economic historians explore changes in economic well-being and how economic institutions have developed. The emergence of markets, the forces shaping the industrial revolution, the sources of improvements in agricultural productivity, the influence of railroads and other new technologies provide perspective on current economic issues.

O). Economic Development, Technical Change, and Growth -- Economists who are interested in the development of economies often focus on third world countries. Why have some countries developed while others have not? How might the industrialized countries improve the prospects for development around the world? Who gains and who loses with industrialization?

P). Economic Systems -- Analysts compare the capital market system to the various forms of socialism and the transition from centrally planned to more market-based economic systems.

Economists sometimes address issues in specific countries like China, Cuba, and Poland.

Q). Agricultural and Natural Resource Economics, Environmental and Ecological Economics -- Economists study farming, fishery, and forests with a focus on prices, markets, and changing technologies. Natural resource economists study markets forenergy (oil, coal, and electricity) and mineral resources. Economists have played an important role in the evolution of policies to promote clean air, water, and land.

R). Urban, Rural, and Regional Economics -- Economists analyze the location decisions of households and firms and the associated issues in housing, transportation, and local government.

S). Miscellaneous Categories -- Data, dissertations, and book reviews are classified here.

T). Other Special Topics -- Other special topics include the economics of the arts, religion, and culture.

Economics and ethics

Most economists would insist that one distinguish between positive and normative economics, and most would argue that economics is mainly relevant to policy because of the information it provides concerning the consequences of policy. Yet the same economists who so sharply distinguish positive and normative economics will often turn around and offer their advice concerning how to fix the economy. In addition, there is a whole field of normative economics.

Economic outcomes, institutions, and processes may be better or worse in several different ways. Some outcomes may make people better off. Other outcomes may be less unequal. Others may restrict individual freedom more severely. Economists typically evaluate outcomes exclusively in terms of welfare. This does not imply that they believe that only welfare is of moral importance. They focus on welfare, because they believe that economics provides a particularly apt set of tools to address questions of welfare and because they believe or hope that questions about welfare can be separated from questions about equality, freedom, or justice. As sketched below, economists have had some things to say about other dimensions of moral appraisal, but welfare takes centre stage. Indeed normative economics is called _welfare economics.

Welfare

One central question of moral philosophy has been to determine what things are intrinsically good for human beings. This is a central question, because all plausible moral views assign an important place to individual welfare or well-being. This is obviously true of utilitarianism (which hold that what is right maximizes total or average welfare), but even non-utilitarian views must be concerned with welfare, if they recognize the virtue of benevolence, or if they are concerned with the interests of individuals or with avoiding harm to individuals.

There are many theories of well-being, and the prevailing view among economists themselves has shifted from hedonism (which takes the good to be a mental state such as pleasure or happiness) to the view that welfare is the satisfaction of preferences. Unlike hedonism, taking welfare to be the satisfaction of preference specifies how to find out what is good for a person rather than committing itself to any substantive view of a person's good. Note that equating welfare with the satisfaction of preferences is not

equating welfare with any feeling of satisfaction. If welfare is the satisfaction of preferences, then a person is better off if what he or she prefers comes to pass, regardless of whether that occurrence makes the agent feel satisfied.

Efficiency

Economists have instead explored the possibility of making welfare evaluations of economic processes, institutions, outcomes, and policies without making interpersonal comparisons. Consider two economic outcomes S and R, and suppose that some people prefer S to R and that nobody prefers R to S. In that case S is ―Pareto superior‖ to R, or S is a ―Pareto improvement‖ over R. Without making any interpersonal comparisons, one can conclude that people's preferences are better satisfied in S than in R. If there is no state of affairs that is Pareto superior to S, then economists say that S is ―Pareto optimal‖ or ―Pareto efficient.‖ Efficiency here is efficiency with respect to satisfying preferences rather than minimizing the number of inputs needed to produce a unit of output or some other technical notion.

Other directions in normative economics Although welfare economics and concerns about efficiency dominate normative economics, they do not exhaust the subject, and in collaboration with philosophers, economists have made a wide variety of important contributions to contemporary work in ethics and normative social and political philosophy. In addition economists and philosophers have been working on the problem of providing a formal characterization of freedom so as to bring tools of economic analysis to bear. Others have developed formal characterizations of equality of resources, opportunity, and outcomes and have analyzed the conditions under which it is possible to separate individual and social responsibility for inequalities. John Roemer has put contemporary economic modelling to work to offer precise characterizations of exploitation. Amartya Sen and Martha Nussbaum have not only developed novel interpretations of well-being in terms of capabilities, but Sen has linked them to characterizations of egalitarianism and to operational measures of deprivation.

Relevance of Economics

About the importance of economics Malthus says, ―Political economy is perhaps the only science of which it may be said that the ignorance of it is not merely a derivation of good but produce great positive evil.‖

Following are the main advantages of the study of economics.0

1) For the producer: Economics is very useful for the producer. It guides him that how he should combine the four factors of production and minimize the cost of production.

2). For the consumer: The consumer can adjust his expenditure of various goods in better way if he knows the principles of economics. He will spend his income according the law of Equi-Marginal utility in order to get maximum satisfaction.

3). solving economic problems: It helps in removing the poverty from the country. Developing countries are facing many problems like unemployment, over population low per capita income and low

production. Economics is very useful in solving these problems.

4). Leaders of nations: Its study is helpful for the leaders to understand the economic problems if they have a knowledge of Economics.

5). Finance minister: Finance minister prepares the yearly budget of the country. Economics guides him that how he should frame the tax policy and monetary policy.

6). For the distribution of the national income: From the study of economics one can easily judge that how the income should be distributed among the four factors of production. For this purpose Marginal productivity theory is suggested by economics.

7). Cultural value: A person's education cannot be considered complete unless he has some knowledge of economics. The events which happen daily around us have an important economic bearing. So there is also the cultural value of the study of economics.

8). Common man: The study of economics is very useful for every citizen. It enables him to understand and criticize the economic policies of the government. He can also guide the government.

9). Economic planning: In the modern age the importance of economic planning cannot be ignored. Through planning we can utilize our natural resources in better way and can improve our economic condition.

10). Importance of labour : It guides the workers that how they can get maximum wages from the employer. It enables them to get the right of trade union, collective bargaining and fixation of working hours.

11). Solution for economic crisis: It guides the nations that how they can save themselves from the economic crises. The advanced countries desire is that there should be economic stability and full employment without inflation to achieve these objectives, economics is very useful for them.

12). Inspiration for development: The study of advanced countries economy inspires the less development countries that they can also improve their economics conditions.

13). Intellectual value: Economics has great intellectual value, because it broadens our out-look, sharpens our intellect and inculcate in us the habit of balanced thinking.

14). Optimum use of resources: In the many countries there is a lot of wastage of resources. The study of economic development will enable them to make the optimum use of their resources.

15). creates the sense of responsibility: Economics develop the sense of responsibility among the citizens by explaining the various problems and their solutions.

16). Useful for international trade: Its study is very useful for international trade. It helps the importers and exporters to earn maximum profit. A businessman can easily understand the trade

policies of various countries.

Notes

Economic Analysis

Economic analysis is a process whereby the strengths and weaknesses of an economy are analyzed. Economic analysis is important in order to understand the exact condition of an economy. Macroeconomics and Economic Analysis: Macroeconomic issues are important aspects of the economic analysis process. However, economic analysis can also be done at a microeconomic level. Macroeconomic analysis gives insight into the fundamentals of an economy - and the strengths and weaknesses of economies. Macroeconomic analysis takes into account growth achieved by aar economy, or rather a sector of that economy. It tries to reveal reasons behind a particular economic phenomenon like growth or reversal of the economy.

Inflation and Economic Analysis: Many countries in the world are plagued by rising inflation. Economic analysis tells us why inflation has taken place. It also suggests ways in which the rate of inflation could be reduced, so that economic development could continue.

Economic Analysis and Government Policies: Government policies and plans that affect the economy have always been an important part of economic analysis. Since policies and plans adopted by a particular government are responsible for shaping an economy, they are always closely scrutinized by various processes of economic analysis.

Economic Ratings and Economic Analysis: Economic ratings are another important aspect of economic analysis, as it provides an accurate picture of how an economy is faring compared to others.

Economic Analysis and Comparison of Economic Policies: It is a good way to analyze an economy by comparing its policies with those of other economies. This is all more applicable in the case of economies that are of similar types, for example developing economies.

Economic methodology and social studies of science

Throughout its history, economics has been the subject of sociological as well as methodological scrutiny. Many sociological discussions of economics, like Marx's critique of classical political economy, have been concerned to identify ideological distortions and thereby to criticize particular aspects of economic theory and economic policy. Since every political program finds economists who testify to its economic virtues, there is a never-ending source of material for such critiques.

The influence of contemporary sociology of science and social studies of science, coupled with the difficulties methodologists have had making sense of and rationalizing the conduct of economics, have led to a sociological turn within methodological reflection itself. Rather than showing that there is good evidence supporting developments in economic theory or that those developments have other broadly epistemic virtues. Many methodologists and historians have argued that these changes reflect a wide variety of non-rational factors, from changes in funding for theoretical economics, political commitments, personal rivalries, attachments to metaphors, or mathematical interests.Furthermore, many of the same methodologists and historians have argued that economics is not only an object of social inquiry, but also as a tool of social inquiry. By studying the incentive structure of scientific disciplines and the implicit or explicit market

forces impinging on research (including of course research in economics), it should be possible to write the economics of science and the economics of economics itself.

dMethodenstreit

Methodenstreit is a German term referring to an intellectual controversy or debate over epistemology, research methodology, or the way in which academic inquiry is framed or pursued. More specifically, it also refers to a particular controversy over the method and epistemological character of economics carried on in the late 1880s and early 1890s between the supporters of the Austrian School of Economics, led by Carl Menger, and the proponents of the (German) Historical School, led by Gustav von Schmoller. On an intellectual level the Methodenstreit was a question of whether there could be a science, apart from history, which could explain the dynamics of human action. The Historical School contended that economists could develop new and better social laws from the collection and study of statistics and historical materials, and distrusted theories not derived from historical experience. Thus, the German Historical School focused on specific dynamic institutions as the largest variable in changes in political economy. The Historical School were themselves reacting against materialist determinism, the idea that human action could, and would (once science advanced enough), be explained as physical and chemical reactions. The Austrian School by contrast believed that economics was the work of philosophical logic and could only ever be about developing rules from first principles - seeing human motives and social interaction as far too complex to be amenable to statistical analysis - and purporting their theories of human action to be universally valid.Nature of Economic Laws:

Economics, like all other sciences, has drawn its own set of generalizations or laws. Economic laws are nothing more than careful conclusions and inferences drawn with the help of reasoning or by the aid of observation of human and physical-nature. In everyday life, we see man is always busy in satisfying his unlimited wants with limited means. In doing so, it acts upon certain principles. These principles or generalizations which an average man usually follows when he is engaged in economic activity are named *"Economic Laws"*.

Economic laws the statements of general tendencies. In the words of **Marshall: ―**Economic laws are those social laws which relate to branches of conduct, which the strength of motive chiefly concerned can be measured by money prices‖.

1. **Laws of economics are less exact.** The***nature of economic laws***is that they are less exact ascompared to the laws of natural sciences like Physics, Chemistry, Astronomy, etc. An economist cannot predict with surety as to what will happen in future in the economic domain. He can only say as to what is likely to happen in the near future.
2. **Economic laws are essentially hypothetical.** Economic laws, writes Seligman, are essentially hypothetical. They are true under certain given conditions. If these conditions are fulfilled, the conclusions drawn from them will be true and exact as those of the laws of physical sciences. From this statement that laws of economics are hypothetical, we should not conclude that, they are useless or unreal. In the words of **Samuelson** writes ―Despite the approximate character of economics laws, it is blessed with many valid principles‖.

3. **Economic laws qualitative or quantitative.** Laws of economics are qualitative in nature. They are not exactly stated in quantitative terms. They tell the direction of change which is expected rather than the amount of change. For example, according to the law of demand, the quantity demanded varies inversely with price. We do not say that 10% rise in price will lead to 30% fall m the quantity demanded.
4. **Applies on the average in normal conditions.** Economic laws do not deal with any particular individual, firm, commodity etc. It takes an average economic unit and lays down its economic behavior.
5. **Laws of economics are more exact than the laws of other social sciences.** We do admit that the laws of economics are not 100% exact. They are, however, more exact than the laws of any other social science.

Methods of Economic Analysis:

An economic theory derives laws or generalizations through two methods: (1) Deductive Method and (2) Inductive Method.These two ways of deriving economic generalizations are now explained in brief:

1) Deductive Method of Economic Analysis:

The deductive method is also named as analytical, abstract or prior method. The deductive method consists in deriving conclusions from general truths, takes few general principles and applies them draw conclusions. For instance, if we accept the general proposition that man is entirely motivated by self-interest. In applying the deductive method of economic analysis, we proceed from general to particular. The classical and neo-classical school of economists notably, Ricardo, Senior, Cairnes, J.S. Mill, Malthus, Marshall, Pigou, applied the deductive method in their economic investigations.

Merits of Deductive Method:

The main merits of deductive method are as under:

(i) This method is near to reality. It is less time consuming and less xpensive. (ii) The use of mathematical techniques in deducing theories of economics brings exactness and clarity in economic analysis. (iii) There being limited scope of experimentation, the method helps in deriving economic theories. (iv) The method is simple because it is analytical.

Demerits of Deductive Method:

It is true that deductive method is simple and precise, underlying assumptions are valid. (i) The deductive method is simple and precise only if the underlying assumptions are valid. More often the assumptions turn out to be based on half truths or have no relation to reality. The conclusions drawn from such assumptions will, therefore, be misleading. (ii) Professor Learner describes the deductive method as _armchair‘analysis. According to him, the premises from which inferences are drawn may not hold good at all times, and places. As such deductive reasoning is not applicable universally. (iii) The deductive method is highly abstract.

It requires; a great deal of care to avoid bad logic or faulty economic reasoning. As the deductive method employed by the classical and neo-classical economists led to many facile conclusions due to reliance on imperfect and incorrect assumptions, therefore, under the German Historical

Notes

School of economists, a sharp reaction began against this method. They advocated a more realistic method for economic analysis known as inductive method.

1.Inductive Method of Economic Analysis:

Inductive method which also called empirical method was adopted by the ―Historical School of Economists". It involves the process of reasoning from particular facts to general principle. This method derives economic generalizations on the basis of (i) Experimentations (ii) Observations and (iii) Statistical methods.

In this method, data is collected about a certain economic phenomenon. These are systematically arranged and the general conclusions are drawn from them.

For example, we observe 200 persons in the market. We find that nearly 195 persons buy from the cheapest shops, Out of the 5 which remains, 4 persons buy local products even at higher rate just to patronize their own products, while the fifth is a fool. From this observation, we can easily draw conclusions that people like to buy from a cheaper shop unless they are guided by patriotism or they are devoid of commonsense.

Merits of Inductive Method:

(i) It is based on facts as such the method is realistic. (ii) In order to test the economic principles, method makes statistical techniques. The inductive method is, therefore, more reliable. (iii) Inductive method is dynamic. The changing economic phenomenon are analyzed and on the basis of collected data, conclusions and solutions are drawn from them. (iv) Induction method also helps in future investigations.

Demerits of Inductive Method:

The main weaknesses of this method are as under:

(i)If conclusions drawn from insufficient data, the generalizations obtained may be faulty. (ii) The collection of data itself is not an easy task. The sources and methods employed in the collection of data differ from investigator to investigator. The results, therefore, may differ even with the same problem. (iii) The inductive method is time- consuming and expensive.

The above analysis reveals that both the methods have weaknesses. We cannot rely exclusively on any one of them. Modern economists are of the view that both these methods are complimentary. They partners and not rivals. Alfred Marshall has rightly remarked: ―Inductive and Deductive methods are both needed for scientific thought, as the right and left foot are both needed for walking‖. We can apply any of them or both as the situation demands.

Micro and Macro Economics

I. Micro Economics and Macro Economics

Introduction

Economics is the branch of knowledge that studies about the behaviour of individuals and their activities. In doing so, the discipline focuses upon the *economic factors* that influence the behaviour and activities. Specifically, economics studies about the behaviour of economic units (like households, firms). Such a study can be conducted by focusing

upon the _individual‘activity or by considering the ***aggregate aspects*** of activities of all individuals together.

Broadly speaking, the first one is called as the micro economic study and the second one is called as the macroeconomic study. *Specifically, micro economics studies and explains the behaviour of individual economic units where as macro economics studies and predicts the behaviour of economic variables in aggregate form like aggregate consumption, employment etc.* The study of individual decision maker (household, firm) and the economic choices that he faces are the starting blocks of micro economic enquiry. On the other hand, macroeconomics visualises relationships among aggregate variables and explores the consequences as the aggregate variables interacts each other.

Aggregate activity is the result of activities of individual economic units. Then why should we need a separate macroeconomic study as microeconomics attempts to study about the behaviour and activities of individual economic units? The reason is that many a times even the best decisions, from the viewpoint of individual economic units, may not result in best results for the society as a whole.

Another view regarding the distinction between micro and macro economics is provided by the Swedish economist Axel Leijonhufvud (pronounced as *leonwood*). He argued that the fundamental difference between micro economics and macroeconomics is that the former primarily studies about the situations of full utilisation of resources whereas the latter primarily studies about the situations of underemployment and excess capacity.

Introduction of the Concepts

It is widely accepted that the Norwegian economist Ragnar Frisch in 1933 coined the terms microeconomics and macro economics. But the Austrian economist Fritz Machlup argued that the writings of Frisch only have terms like _micro dynamic‘ and _macro dynamic‘ even though he used them with a meaning almost near to the current meaning and usage. It is after the publication of *General Theory* by John Maynard Keynes in 1936, the term _macroeconomics‘ became popular and the distinction between micro and macro got attention. Even though Keynes did not use these terms explicitly but, in fact, refereed to macroeconomics as the ―*the theory of output and employment as a whole”* in *General Theory*.

Differentiate between Micro and Macro Economics

The difference between micro and macro economics many a times resulted in intense debate among economists. In fact, both attempt to study about the aspects of economic activity *but* from different viewpoints. Once Kenneth J Arrow remarked it as a ―major scandal‖ that the neo classical price theory which is micro economic in nature cannot explain macroeconomic phenomena like unemployment (especially the crisis of 1930s). At the same time economists like Robert Lucas and Thomas Sargent argued that Keynesian economics is ―fundamentally flawed‖ as many of the Keynesian macroeconomic ideas do not have micro foundations (explanations). As a matter of fact, lack of _micro foundations‘does not by it mean that the Keynesian macroeconomic ideas could not be explained from micro economic level.

Notes

1.7.Check your progress Questions.

Check your Progress-2

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

i)Define Macro Economics.

1.8.Answer to check your progress Questions.

1. In macro economics, we study the economic behaviour of the large aggregates such as the overall conditions of the economy such as total production, total consumption, total saving and total investment in it. It includes: 1) National income and output 2) General price level 3) Balance of trade and payments, 4) External value of money 5) Saving and investment and 6) Employment and economic growth

.2.The fundamental difference between micro economics and macroeconomics is that the former primarily studies about the situations of full utilisation of resources whereas the latter primarily studies about the situations of underemployment and excess capacity.

1.9.Summary

In this unit, you have learnt about the meaning, definition and importance of micro and macro economics. This knowledge would make you understand what is macro economics how it can be functioned in the economy.

1.10.Key words

Macro Economics, Employment, Production, Micro Economics and under-employment

1.11.Self Assessment Questions and Exercises.

Short Answer Questions

1.Define Macro Economics.

2.Methods of Economic Analysis.

Long answer Questions.

1.Differentiate Micro economics and macro Economics.

2.Explain the nature and scope of the Macro Economics.

1.12.Further Readings.

1.Mithani, D.M. (2003), **“Modern Economic Analysis”,** Himalaya Publishing House, Mumbai.

UNIT-2: NATIONAL INCOME ACCOUNTING

Notes

Structure:

2.1. National Income Accounting

Introduction

Put simply, national income accounting (also called as social accounting) is the measurement of value of all economic activities of a nation. According to Paul Studenski who wrote the history of development of national accounts, the pre history of national accounting is located in the mercantilist period of sixteenth century. Mercantilists considered wealth of a nation consist of stock of precious metals (like gold, silver). However, it was William Petty, a British mercantilist economist and French economist Pierre Boisguillebert (pronounced as *Bos gil bert*) pioneered the first real estimates of national income.

2.2.Concepts

Petty defined the ―income of the people‖ as ―annual value of labour‖ and ―annual proceed of the stock or wealth of the nation‖. Boisguillebert considered what a nation produces and exchanges as the wealth of a nation rather than the stock of precious metals or so. Later, the French Physiocrats of eighteenth century argued that agriculture was the only productive activity and hence national income is simply equal to the net product of agriculture. By the end of the eighteenth century Adam Smith pointed out that apart from the agricultural production there are many other productive activities like the production of material goods etc. and they also need to be counted. But Smith considered the activities of government employees (including the judicial men, police personnel etc) as unproductive and hence argued for their exclusion.

Karl Marx critiqued Smith‘s view and argued that whether labour

Notes

was productive or not was determined by the social relations of production. For instance, Marx pointed out that hotel chefs and waiters all are productive labourers as their labour is converted into capital for their employer. Hence all that labour is productive if it produces capital. However Marxian theory became problematic during 1890s when the Austrian economist Bohm Bawerk launched hisfamous attack (transformation problem) on Marx‘s labour theory of value.

In the broader history of national accounting the distinction between productive and unproductive activities etc were considered as closed with the advent of ―marginalist revolution‖ brought about by the writings of Italian economist Leon Walras, the British economist Stanley Jevons and the German economist Carl Menger. The British economist Alfred Marshall (also belongs to the marginal school) gave the final blow and pointed out that, "Everything that is produced in the course of a year, every service rendered, every fresh utility brought about is a part of the national wealth."

2.3.Concepts

The Great Depression, Keynes' General Theory and National Accounts

The neo classical economists could not explain the reasons for the crisis and it was Keynes who first made a comprehensive explanation with the concept of aggregate demand. He argued that during a period of downturn the aggregate demand would be very low and the solution is to increase it by increasing the government expenditure.

The suggestions of Keynes required changes in economic policy (especially in the expenditure policy of the government) and this necessitated the analysis of components of aggregate demand. It eventually resulted in the conversion of time series data on national income into ―national income accounts‖. The components of national income accounts like consumption, investment, saving, exports, wages, profits etc are considered as necessary elements to understand and analyse the behaviour and structure of the economy. However, the Russian economist Simon Kuznets‘ estimation of U.S. national income for 1929-1932 (published in 1934) came well ahead of the publication of *General Theory* of Keynes and was the first major attempt in the estimation of national income.

2.4.Measurement:

All economic activity generates income in one way or other. So its measurement can be made by simply estimating the income generated in the economy. But the competing definitions regarding what constitutes ‗productive activity‘make it difficult to measure economic activity through ‗income measurement‘. So ‗national product‘ becomes the widely used concept in the measurement of economic activity. There is one more reason for the shift from ‗national income‘to ‗national product‘.

Keynes was concerned with the effect of financing the British war effort (Second World War) upon the economy. ‗National product‘ involves all final capital goods produced in the economy but in the course of time some part of that capital goods get ‗used up‘ in the process. This consumption of capital goods is called as depreciation and need not happen in the same year in which the measurement takes place. Hence the estimation of the productive capacity of a nation requires the consideration of these aspects. When depreciation is deducted from the gross national product

(GNP) we get net national product (NNP) which is equal to national income.

Notes

NNP = GNP ***minus*** Depreciation

The gross national product (GNP) is defined as the market value of all final goods and services produced by *residents* of a nation in a given period of time, usually a year.

If a person resides in a nation for more than 180 days in a calendar year he is considered as the resident of a nation. Such a resident need not be a citizen of the nation. Hence, GNP refers to the total income earned by the residents of a nation. But what about the total income produced but available within the nation? It is called as the gross domestic product/income (GDP).

The gross domestic product (GDP) is defined as the ***market value*** of all final goods and services produced within an economy in a given period of time, usually a year.

GDP = GNP ***minus*** net factor payments.

Factor payments can flow *out of the* nation or *to the* nation. Hence,

Net factor payments = Factor payments *from* abroad ***minus*** Factor payments *to* abroad.

For instance, consider the ownership of an agricultural estate in India by an American citizen. The profit received by the American citizen is due to the economic activity conducted with in India but since he is an American citizen he wants to send it to America. *That means the profit so earned will be no longer available with in India for domestic use.* This withdrawal of profit from India is called as ‗factor payment *to* abroad'. Hence, the profit generated in the estate will be included in GNP but excluded from the GDP. (Why?) Since the profit will be send to America. Similarly if Indian citizens working in other countries send income to India it will be considered as ‗factor payments *from* abroad'

Check your progress-1

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

1.What is national Income Accounting?

…………………………………………………………………………………

2.5.Importance of National Income Data

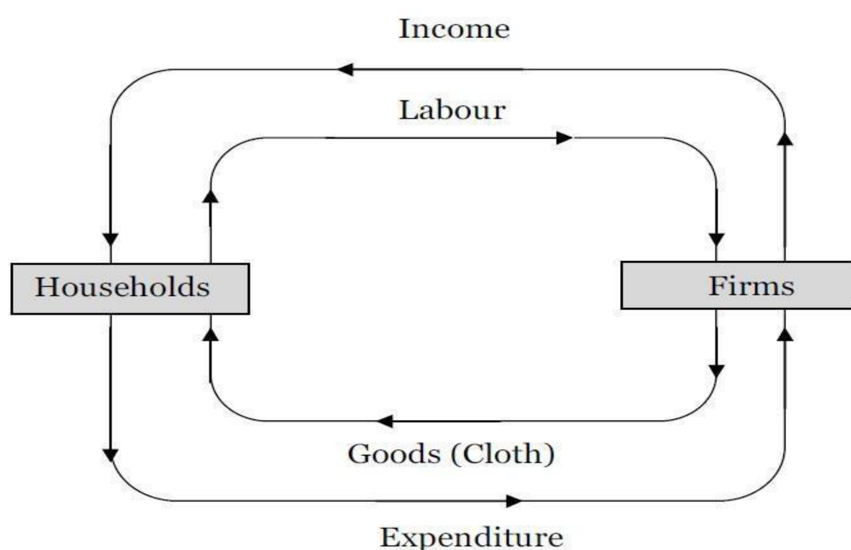
GDP as both Income and Expenditure

GDP can be considered as the total income available for domestic use or as the total expenditure on goods and services produced in the economy. GDP as a measure of income and expenditure is not difficult to understand. For every transaction there will be a seller and buyer. What the seller receives is income whereas what the buyer spends is expenditure and both must be equal. The idea can be better explained with the help of a diagram called as ―circular flow of income‖.

Notes

Circular Flow of Income

The concept was first introduced by the French economist Francois Quesnay. Quesnay was a trained surgeon and his knowledge in medical science helped him to take the example of blood circulation proved by the British physician William Harvey to explain the inter connectivity between different economic activities. The figure given below explains the circular flow for an economy with single input labour and single output cloth.



The inner loop shows the flow of labour units from the households to the firms and from firms households receive cloth. This inner loop represents the flow of goods. The outer loop represents the flow of income/expenditure. Firms give wages to the labour which becomes the income of the households. The households in turn spend this income for buying the cloth produced by the firm and hence it becomes the expenditure of the households. It is now clear that the *GDP is equal to the income received by the households from the labour and the expenditure on the purchase of cloth.*

Stocks and Flows

On the basis of nature of economic variables, they armeasured *at a point of time* or by per *unit of time*. The value of some economic variables is constant over a period of time while that of the others arechanging as time elapses. The former are called as stock variables and the latter are called as flow variables. For instance, GDP is a flow variable as its value changes as time elapses. If you compute the value of GDP every hour it changes as time elapse even though we do not compute like that due to the complexities involved in it. On the other hand, wealth is a stock variable. Its value will not change by every hour as what happens in the case of GDP. The value of wealth changes very slowly. Hence its value is measured *at a point of time* whereas the value of a flow variable is measured per *unit of time*. That is why GDP is often measured per year. The list of some common stock and flow variables are given below:

Stock	Flow
1) Wealth	Income, Expenditure

Measuring GDP: Points to Remember	2) Debt	Fiscal deficit, Revenue deficit
	3) Capital	Investment
	4) Unemployment	Number of persons losing jobs

Notes

Market Value

The definition of GDP is:

The gross domestic product (GDP) is defined as the ***market value*** of all final goods and services produced within an economy in a given period of time, usually a year.

Suppose the nation produces 10 kg of rice and 20 kg of wheat. A simple addition of these quantities would become a wrong calculation. That is, it is wrong to say that 30 kg of cereals represent the GDP. Rice and wheat are valued differently by the people and the calculation of GDP must reflect that. Because of that in the definition we take the market values. If the price of rice/kg and wheat/kg is Rs 12 and Rs 15 respectively the GDP will be:

= (10 kg of rice X Rs 12/kg) + (20 kg of wheat X Rs 15/kg)

= Rs. 120 + Rs. 300 = Rs 420.

Used Goods

The sale/purchase of used goods will not be considered for GDP calculation as GDP considers only the value of goods and services produced in a given year. Used goods are produced some year back and had been included in that year‘s GDP. Thus sale/purchase of used goods represents only transfer of assets not fresh production of income.

Inventories

Inventories mean addition to the stock of a firm. Suppose a firm produced more cloth than it could sell. Also assume that the unsold cloth has been destroyed. The workers received wages for this increased production of cloth but expenditure remains same. In such a situation the profit of the firm must fall equal to the additional wages given for the increased production. Thus income also remains same and hence there is no change in the GDP.

Consider another scenario where the additional cloth has been considered as stock for sale in future. Such addition is called as inventories. When inventories are made it is considered as *purchase by the firm itself.* Then expenditure increases. There will not be a fall in the profit of the firm and hence income also increases. As such both income and expenditure increases by the same amount and GDP also increases by the same value.

The sale of inventories by the firm in a later period is considered just as a sale of used good and so GDP will not increase. Thus, treatment of inventories ensure that the GDP will always reflect the production of goods

and services in the current year or in a given year.

Notes

Intermediate Goods

Intermediate goods are goods used in the different stages of production. They can be considered as the inputs for each stage of production till the final product is released. The *wheat flour* produced by a mill is an input for the production of *bread* by a bakery and again becomes an input for a restaurant for making the *sandwich*. Similarly, a mining company that produces *iron ore* sells it to a steel factory which produces *cold rolled (CR) steel*. Iron ore becomes an input for this stage of production. Again the CR steel is purchased by an automobile factory to produce cars. If the car is purchased by a consumer for his personal use the car becomes a final good. But if the *car* is purchased by a business firm that produces PVC pipes the car becomes an input for the production of pipes and becomes an intermediate good. In short, wheat flour, bread, iron ore, CR steel, car purchased by the PVC pipe manufacturer are intermediate goods required for the production of other goods. But the car purchased for personal use is not an intermediate good, it is a final good.

Since the GDP includes the value of all ***final*** goods andservices, the value of intermediate goods are excluded from the calculation of GDP. If we consider the value of these intermediate goods at all stages of production, it would amount to the *counting the same value several times* (sometimes called as double counting) and result it in an inflated value for the GDP.

2.6.Diificulties in its Measurement

The problem of intermediate goods can be better solved by considering the value added at each stage of production. Since GDP is the *total value* of all *final* goods and services, the ***value added at each stage*** of production alone need to be counted. Value added at each stage of production is found out by deducting the value of input from the value of output.

The final goods can be easily identified if they are:

(1) purchased by the consumers (households including individuals)

(2) purchased by the government

(3) purchased by the business firms as investment and not as an input for further production

Imputations

Remember GDP includes the ***market value*** of all final goods and services. Then what happens if there if there no market for a particular good or if it is not sold in the market? Such goods cannot be ignored in computing GDP. The problem is solved by *estimating the market value of such goods* and is called as the ***imputed value***.

Imputed value is often computed for the rent of owner occupied houses. If a family or a business firm takes an apartment/shop space for rent that rent immediately enters into the calculation of GDP. Hence owner occupied apartment/shop space also need to be treated similarly. The rent that would have received becomes the imputed value of rent for owner occupied properties.

Notes

Imputation is applied in valuing the services of government like the services of police, judiciary, civil services etc. Since these services do not enter into a market yet takes place in public place, imputation is necessary to compute their value. The imputed value is calculated by considering the cost incurred (wages and other allowances) to provide such services.

If the same logic is extended to the self owned cars, that it gives car rental service to the owner, an imputed value for the services of the car can also be computed. But such imputations are not attempted to avoid complexities.

The output produced in the family kitchen are indeed output of the nation but are excluded from the GDP calculation simply because of the reason that such output do not enter into the market. The services of house wives are thus excluded although they engage in an important productive activity. It is for these reasons Gregory Mankiw in *Macro Economics* remarks that ―GDP is an imperfect measure of economic activity‖.

Again, as more and more female persons enters into the labour market the production of food in the home kitchen declines as it is difficult to find enough time for cooking. Consequently food purchased from the hotels and restaurants and ‗dining out' increases and GDP also increases correspondingly. Actually there is no noticeable increase in food production between these two situations but GDP increases in the second situation. Bradford DeLong in *Macro Economics,* points out that from the viewpoint there is *no increase in the society's wealth* or its output.

Other Measures of Economic Activity

Recall that we have already defined:

The gross national product (GNP) is defined as the market value of all final goods and services produced by *residents* of a nation in a given period of time,

usually a year.____________________________ (1)

(2)

NNP = GNP ***minus*** Depreciation __________________________

GDP = GNP ***minus*** net factor payments from abroad. _________ (3)

Net factor payments = Factor payments from abroad minus Factor payments to abroad.______________(4)

To summarise;

GNP is *National* Product
GDP i*Domestic* Product

In this context, computation of National Income considers GNP and NNP. NNP represents the market value of all final goods and services minus depreciation. Market value involves indirect business tax (or sales tax/VAT) and is received by the government. This tax amount is not realised by the firms and hence cannot be distributed as income. Recall the figure of circular flow of income. As such, national income is calculated;

National Income = NNP ***minus*** Indirect Business Taxes _______________ ______(5)

Notes

It is from the national income that we find out the total ***personal income*** of the nation. Personal income is the total income received by the individuals (households and non-corporate businesses) of the nation. The following adjustments in the national income will give the personal income:

Personal Income = National Income

minus Corporate profits

Social Insurance Contributions

Net interest earned by the businesses

plus Dividend distributed

Government transfers to individuals

Personal interest income_________________ (6)

The above given three items are subtracted from the national income but out of the corporate profits the companies distribute a portion of it as dividend to the share holders and is available to house holds. Therefore the dividend income is added. Similarly the social insurance contributions made to the government is not available for the households but the government transfers or redistributes some income to the households. Similarly, net interest earned by the businesses (involves interest payment made to the households, interest earned by the firms etc) needs to be subtracted but interest income earned by the households is to be added.

The total income available to the individuals for their own personal use is called as ***disposable income*** and is found out from the personal income. In fact from the personal income, the personal income tax and other non tax payments (toll, fees etc) are made and when that is subtracted from the personal income the disposable income is computed.

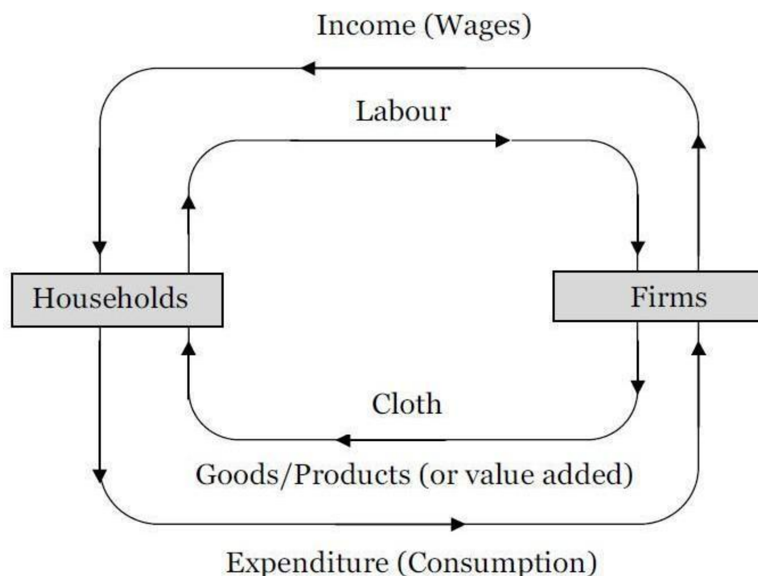
Disposable Income = Personal Income ***minus*** personal income tax and non tax payments (toll, fees etc) ______________________________________(7)

Methods of Measurement

There are three methods of measurement; income method, product or value added method and the expenditure method. In the initial phase, production of goods and services take place. During the course of production payment is made to all factors of production like wages to labour etc. Once the production completes the output is distributed for different uses like consumption etc. The different methods of measurement are better understood by observing the circular flow of income for a simple economy. The income, product and the expenditure loops of the figure given below

Notes

represent these methods respectively



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2.7.Check your progress Questions.

Check your progress-2

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

1.What means the GDP?

2.8.Answer to check your progress Questions.

1. National Income Accounting (also called as social accounting) is the measurement of value of all economic activities of a nation.

2. GDP can be considered as the total income available for domestic use or as the total expenditure on goods and services produced in the economy. GDP as a measure of income and expenditure is not difficult to understand. For every transaction there will be a seller and buyer.

2.9.Summary

In this unit, you have learnt about in meaning, concepts, measurement and difficuilies in measurement. This knowledge would make you understand what a national income and how it can be functional at a national level. The conept such as production and investment would have made you to distinguish these activition from he national income activities and you might have learnt about the meaning and its functions in the national level.

2.10.Key words

National Income, GDP, NNP

Notes

2.11.Self Assessment Questions and Exercises.

Short Answer Questions

1. What are the measurments used in National Income Accounting?

2. What is GDP?

Long answer Questions.

1.Explain the importance of national Income Data?

2.Describe the difficulties to measure the National Income?

2.12.Further Readings.

1.Shapiro, Edward (2008), **"Macro Economic Analysis",** Galyotia Publications, New Delhi.

BLOCK II: THEORIES OF EMPLOYMENT

UNIT-3: THEORY OF EMPLOYMENT - I: CLASSICAL THEORY OF EMPLOYMENT AND INCOME.

Structure:

3.1.Classical Theory of Employment and Income.
3.2.Check your progress Questions.
3.3.Answer to check your progress Questions.
3.4.Summary
3.5.Key words
3.6.Self Assessment Questions and Exercises. Short Answer Questions and Long answer Questions.
3.7.Further Readings**.**

3.1.Classical Theory of Employment and Income.

In this unit, we examine briefly the Classical view of Full employment and how employment and output are determined according to classical economists.

The Classical Theory

The Classical economists generally include economists like Adam Smith, Ricardo, Mill, Marshall and Pigou. The fundamental principle of the classical theory is that the economy is self-regulating. Classical economists maintain that the economy is always capable of achieving the natural level of real GDP or output, which is the level of real GDP that is obtained when the economy's resources are *fully employed.* While circumstances arise from time to time that cause the economy to fall below or to exceed the natural level of real GDP, self- adjustment mechanisms exist within the market system that work to bring the economy back to the natural level of real GDP. The classical doctrine—that the economy is always at or near the natural level of real GDP—is based on two firmly held beliefs: Say's Law and the belief that prices, wages, and interest rates are flexible.

Classical Assumptions

The classical economics is based upon the following assumptions:

1. There is a state of full employment.
2. There is perfect competition in the product and labour markets.
3. There is closed laissez faire economy.

4. Supply always creates its own demand.
5. There is perfect wage –price flexibility.
6. The quantity of money is given.
7. Money acts only as a medium of exchange.

Classical View of Full Employment

Full employment is a condition of the national economy, where all or nearly all persons willing and able to work at the prevailing wages are able to work. The simplest definition of full employment is that it is a situation in the economic system characterized by the absence of involuntary unemployment. It is also defined as absolutely 0% rate of unemployment or as the level of employment rates when there is no cyclical unemployment. It is defined by economists as being an acceptable level of natural unemployment above 0%. The absolute full employment in the sense of providing jobs to the entire labour force may not be possible because of the immobility of the workers from one industry to another or from one place to another. Thus, there may be a continuous existence of surplus manpower in some of the labour markets while others may have shortages of manpower. So long as the margins of unemployment are matched b equivalent labour shortages elsewhere in the economy, the employment may be assumed to be full.

Thus, full employment is compatible with the existence of some unemployment which is frictional in character and arises due to factor immobilities, temporary layoffs caused by seasonal nature of employment. The involuntary unemployment is caused by the excess supply of labour over the demand for it. The 20th century British economist William Beveridge stated that an unemployment rate of 3% was full employment. Other economists have provided estimates between 2% and 13% as full employment depending on the country, time period, and the various economists' political biases. An alternative, more normative, definition would see "full employment" as the attainment of the *ideal* unemployment rate, where the types of unemployment that reflect labor-market inefficiency (such as structural unemployment) do not exist. Only some *frictional* unemployment would exist, where workers are temporarily searching for new jobs. For example, Lord William Beveridge defined "full employment" as where the number of unemployed workers equaled the number of job vacancies available. Full employment does not mean that there is 'zero unemployment', but rather that all of the people willing and able to work have jobs at the current wage rate. Full employment is the quantity of labour employed when the labour market is in equilibrium.

The Relationship between Employment and Output

The classical neutrality proposition implies that the level of real output will be independent of the quantity of money in the economy. We consider what determines real output. A key component of the classical model is the short-run production function. In general terms at the micro level a production function expresses the maximum amount of output that a firm can produce from any given amounts of factor inputs. Classical full employment equilibrium is perfectly compatible with the existence of Frictional and voluntary unemployment, but does not admit the possibility of involuntary unemployment. The increase in production during short period

becomes essentially a function of increased inputs of factor services like labour (N), capital (K) and land (L).

$$Q = f\,(N,K,L)$$

Given the above aggregate production function, the variations in the factor inputs may increase the output either in the same proportion, or in a greater or lesser proportion. However for the economic system as a whole, the level of output in the short period varies directly with the input of labour, while the inputs of capital and natural resources (land) remain constant.

(Determination of the Level of Employment and Output)

The basic contention of classical economists was that if wages and prices were flexible, a competitive market economy would always operate at full employment. That is, economic forces would always be generated so as to ensure that the demand for labour was always equal to its supply. In the classical model the equilibrium levels of income and employment were supposed to be determined largely in the labour market. At lower wage rate more workers will be employed. That is why the demand curve for labour is downward sloping. The supply curve of labour is upward sloping because the higher the wage rate, the greater the supply of labour.

In the following figure the equilibrium wage rate (w_o) is determined by the demand for and the supply of labour. The level of employment is OL_o.

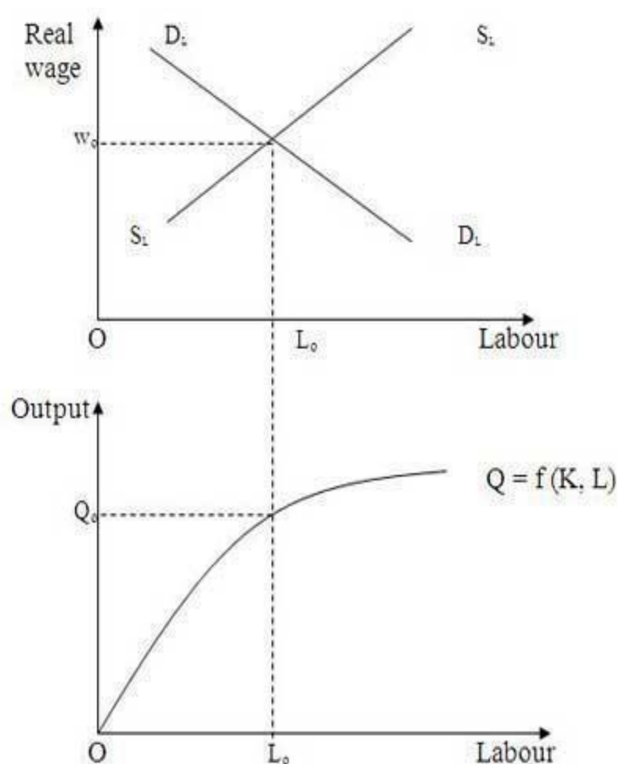


Figure 3.1 Determination of Employment

The lower panel of the diagram shows the relation between total output and the quantity of the variable factor (labour). It shows the short-run production function which is expressed as Q = f (K, L), where Q is output, K

is the fixed quantity of capital and L is the variable factor labour. Total output Q_o is produced with the employment of Lo units of labour. According to classical economists this equilibrium level of employment is the ‗full employment' level. So the existence of unemployed workers was a logical impossibility. Any unemployment which existed at the equilibrium wage rate (W_o) was due to frictions or restrictive practices in the economy in nature.

The classical economists believed that aggregate demand would always be sufficient to absorb the full capacity output Q_o. In other words, they denied the possibility of under spending or overproduction. This belief has its root in Say‘s Law. According to Say‘s Law supply creates its own demand, i.e., the very act of producing goods and services generates an amount of income equal to the value of the goods produced.

There is a serious omission in Say‘s Law. If the recipients of income in this simple model save a portion of their income, consumption expenditure will fall short of total output and supply would no longer create its own demand. Consequently there would be unsold goods, falling prices, reduction of production, unemployment and falling incomes. However, the classical economists ruled out this possibility because they believed that whatever is saved by households will be invested by firms. That is, investment would occur to fill any consumption gap caused by savings leakage. Thus, Say‘s Law will hold and the level of national income and employment will remain unaffected.

The classical economists also argued that capitalism contained a very special market – the money market – which would ensure saving investment equality and thus would guarantee full employment. According to them the rate of interest was determined by the demand for and supply of capital. The demand for capital is investment and its supply is saving. The equilibrium rate of interest is determined by the saving-investment equality. Any imbalance between saving and investment would be corrected by the rate of interest. If saving exceeds investment, the rate of interest will fall. This will stimulate investment and the process will continue until the equality is restored. The converse is also true.

Price Flexibility: The classical economists further believed that even if the rate of interest fails to equate saving and investment, any resulting decline in total spending would be neutralized by proportionate decline in the price level. That is, Rs 100 will buy two shirts at Rs 50, but Rs 50 will also buy two shirts if the price falls to Rs 25. Therefore, if households saves more than firms would invest, the resulting fall in spending would not lead to decline in real output, real income and the level of employment provided product prices also fall in the same proportion.

Wage Flexibility: The classical economists also believed that a decline in product demand would lead to a fall in the demand for labour resulting in unemployment. However, the wage rate would also fall and competition among unemployed workers would force them to accept lower wages rather than remain unemployed. The process will continue until the wage rate falls enough to clear the labour market. So a new lower equilibrium wage rate will be established. Thus, involuntary unemployment was logical impossibility in the classical model.

THE CLASSICAL THEORY OF FULL EMPLOYMENT

The classical theory is the theory of full employment. It outlines a model which ensures equilibrium at full employment. The equilibrium levels of aggregate output and employment are determined by the aggregate production function and the demand and supply of labour. The aggregate production function postulates a positive relationship between output and employment. A higher level of output is associated with a higher level of employment.

$$Q = f(N, \bar{K}, \bar{T})$$

Where q denotes the level of output, N is the level of employment and $\bar{K}$ and $\bar{T}$ represent the fixed stock of capital and technology respectively. The demand function of labour is derived from the aggregate production function. As employment increases, the output also increases the marginal physical product of labour (MP_L) declines. Marginal physical product of labour curve which incidentally is the demand curve for labour, will thus have a negative slope. Any business firm, hiring workers, will provide employment tolabour up to an extent where the real wages paid out to the workers become equal to the marginal physical product of labour. The essential condition for profit-maximisation on the part of a firm, thus, is:

$$WP = MP_L$$

Since the demand for labour is determined by the MPL which diminishes with an increase in output and employment and the real wage (W/P) equals the MPL, the demand for labour is also a function of real wages

$$DL = f\,(W/P)$$

The demand function of labour varies inversely with the real wage rates.

On the supply side, it may be pointed out that work involves strain, exertion and sacrifice of leisure. This makes additional work- load or a large number of labour-hours quite disagreeable to the workers and is generally known as the marginal disutility of labour. Unless this disutility of work is neutralized through the payments of additional real wages, the workers cannot be induced to put in additional labour input. Thus the supply of labour-hours is related positively to the real wages of the workers.

$$S_L = g\,(W/P)$$

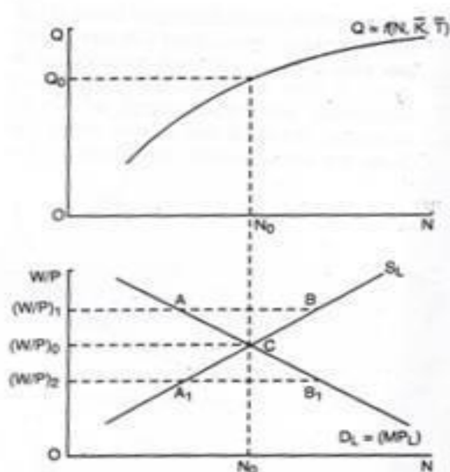


Figure 3.2 Determination of Employment and Output

Given the demand and supply functions of labour, it is possible to determine

the equilibrium level of employment, when the demand for labour gets equalized with the supply of labour at the equilibrium real wage rate $(W/P)_0$. If the real wage rate $(W/P)_1$ is higher than this equilibrium rate, the labour supply will be in excess of the demand for labour, denoting a state of unemployment among the workers and initiating a tendency among the workers to bid down the wages for securing more job opportunities. The decline of real wages will reduce the unemployment gap and there would be a tendency towards the achievement of equilibrium at full employment (N_0). If the real wage, on the other hand, is lower than the equilibrium wage rate, say $(W/P)_2$, the employers will like to absorb more workers. But the workers will be reluctant to take up the jobs offered by the employers, since the disutility of work is more in proportion to the real wages. Consequently, the employers will have to raise real wages in order to hire more workers. The equilibrium is determined ultimately at the full employment level N_0. At $(W/P)_1$ real wage rate, there is an unemployment gap equal to AB which tends to be wiped out by the competition among the workers for more jobs and the equilibrium at $(W/P)_0$ wage rate is finally determined at N_0 full employment level. At a lower real wage rate $(W/P)_2$, there is an over-employment gap equivalent to A_1 B_1 which denotes a state of excess demand for labour. This will push up the wage rate and tend it to approximate to $(W/P)_0$.

The equilibrium level of employment N_0 represents a state of full employment. It is presumed that all the persons who are willing and able to work at $(W/P)_0$ wage rate have been absorbed, except a very small proportion of the frictionally unemployed labour force. At $(W/P)_0$ equilibrium real wage rate which is perfectly consistent with the marginal product of labour, if a certain number of workers are not willing to work, it will clearly mean that these people do not offer their services voluntarily and the level of employment existing in the economy denotes full employment of the employable workers. In the classical system, the unemployment and over-employment gaps tend to be automatically adjusted, over time, through the adjustment mechanism manifest in the wage-flexibility. Any lapse from full employment, assuming the price level to be unchanged would be easily overcome in this system through the variations in wage rates.

Classical System without Saving and Investment

The classical system of full employment equilibrium involves adjustments of the variables in labour market, goods market and money market. The goods market gives the aggregate production function, which indicates different levels of output at different inputs of labour, assuming the stock of capital and technique of production to be given in the short period. The demand for and supply of labour in the labour market determine the equilibrium level of employment, which in the classical system, always coincides with the state of full employment. The money market explains the determination of the price level. The supply function of money determines the price level quite independent of the levels of labour inputs and output.

Classical System with Saving and Investment

The classical model we have been discussing is oversimplified because it does not recognize the processes of saving and investment. We must now recognize that the income earned is not fully spent for consumption goods; some part of this income is withheld from consumption, or saved. Clearly, if planned investment spending is not equal to the income

saved, Say's Law is invalidated. Another part of classical theory provides the mechanism that presumably assures that planned saving will not exceed planned investment. This mechanism is the rate of interest. Classical theory treated saving as a direct function of the rate of interest and investment as an inverse function. The rate of interest will fluctuate freely over the wider range necessary to equate saving and investment. To simplify the exposition of the classical system, let us assume here that the curve is indeed elastic, so that investment is relatively responsive to changes in the rate of interest. Small changes will then keep saving and investment in balance.

In other words, the classical analysis so far has been pursued on the assumption that the community spends away its entire earnings by way of consumption and no part of it is saved. Saving is one possible trouble spot in the otherwise harmonious picture of classical system.

Saving can make problems in Say's Law. Although, the Classical's recognized the existence of saving, they interpreted saving as an alternative way of spending on capital goods. In their scheme of analysis, all saving is automatically transformed into investment spending. In this sense, any amount of saving is unlikely to cause any deficiency in aggregate spending.

The basis of this strategic classical notion is the equilibrating mechanism of the rate of interest, which is supposed to transform savings into an equivalent amount of investment. The classical system postulates both saving and investment as the functions of the rate of interest. Saving is assumed as a direct function of the rate of interest and investment as the inverse function of it and that saving and investment can be brought into equilibrium by the variations in the rate of interest. Thus in the classical system we must introduce the following relations:

S	=	f (r) (Saving function)
I	=	f (r) (Investment function)
S	=	I (Equilibrium in the capital market)

Another significant fact in connection with the above relations is that saving and investment are supposed to be relatively more interest-elastic so that the volumes of saving and investment change with very small changes in the rate of interest.

An excess of S over I can be offset through a reduction in the rate of interest. On the opposite, a rise in the rate of interest can restore equality between them, when investment exceeds saving. The possibility of transforming any level of saving into equivalent volume of investment through small variations in the rate of interest is based on the implicit assumption that there are infinite possibilities of new investment in the economy because, otherwise, the excess of full employment saving over investment will vitiate Say's Law and permit the economic system to degenerate into secular stagnation.

The classical full employment system with saving and investment can be studied through the following set of equations:

$$Q = f(N, ,) \quad \ldots \text{ (i)}$$

DL	=	f (S/P)	--(ii)
SL	=	f (W/P)	…(iii)
MV	=	PQ	…(iv)
S	=	f (r)	…(v)
I	=	f (r)	…(vi)
S	=	I	…(vii)

In addition to the four equations (i) to (iv), that we have used to analyse the classical system (without saving and investment), we have added a new set of equations (v) to (vii) which incorporates saving and investment relationship with rate of interest. These two sets have to be studied quite independently of each other, since the rate of interest and the division of output between the output of consumption and investment goods seems to be independent of the factors influencing the size of national output, quantity of money and the level of wages and prices. However, the impact of S-I inequalities upon the volume of employment needs to be investigated.

Excess of Saving over Investment: If the full employment ex-ante S exceeds the ex-ante I, it means that expenditure on consumption plus investment goods falls short of the value of total output. Given the supply of money, the surplus output can be cleared off the market at lower prices. The fall in price level will push up the real wage rate assuming the money wages to be given. The increase in real wage rate will cause an excess of the supply of labour over the demand for it. The appearance of unemployment will lower the level of output also. The interest rate flexibility will set into motion the process of adjustment. A fall in interest rate will reduce savings, thereby causing an increase in consumption expenditure. The investment expenditure will also increase. Given the supply of money, an increase in aggregate expenditure will raise the demand for money which will push up the prices resulting in a decline in real wages and a consequent reduction in the excess supply gap in the labour market. Thus, a reduction in the rate of interest, initiating a tendency towards equilibrium in the capital market, sets such forces into action which tend the labour market also towards equilibrium at full employment.

Excess of Investment over Saving

An excess of ex-ante I over S at the prevailing rate of interest will simply an excess of ex-ante expenditure over the value of current output. This will lead to an increase in the price level. The real wage rate will go down and create a state of excess demand in the labour market. That would ultimately be chocked off by a rise in the rate of interest, setting a chain reaction in the money market. Thus, the interest rate flexibility ensures a state of full employment in the economic system. It follows that classical system has an inbuilt mechanism in wage and interest rate flexibility which tend it continuously towards full employment whenever the economy faces certain lapses from full employment.

Wage-Price Flexibility and Full-Employment

The classical economists also proved the validity of the assumption of full-employment with another fundamental logic. According to them, the

amount of production which the business firms can supply does not depend only on aggregate demand or expenditure but also on the prices of products. If the rate of interest temporarily fails to bring about equality between saving and investment and as a result deficiency of aggregate expenditure arises, even then the problem of general over-production and unemployment will not arise. This is because they thought that the deficiency in aggregate expenditure would be made up by changes in the price level. When due to the increase in the savings of the people, the expenditure of the people declines; it will then affect the prices of products. As a result of fall in aggregate expenditure or demand, the prices of products would decline and at reduced prices their quantity demanded will increase and as a result all the quantity produced of goods will be sold out at lower prices. In this way, they expressed the view that in spite of the decline in aggregate expenditure caused by the increase in savings, the real output, income and employment will not fall provided the fall in prices of products is proportionate to the decline in aggregate expenditure.

Classical economists thought that a free-market capitalist economy actually works in that way. Owing to the intense competition between the sellers of products as a consequence of the fall in expenditure, the prices will decline. This is because when aggregate expenditure on goods or demand for them declines, the various sellers and producers reduce the prices of their products so as to avoid the excessive accumulation of stocks of goods with them. Hence, according to the classical logic, increased saving will bring down the prices of products and not the amount of production and employment. But now a question arises to what extent the sellers or producers will tolerate the decline in prices. However, to make their business profitable they will have to reduce the prices of the factors of production such as labour. With a fall in wages of labour, all workers will get employment. If some workers do not want to work at reduce3d wages, they will not get any job or employment and therefore will remain unemployed. But, according to classical economists, those workers who do not want to work at lower wages and thus remain unemployed are only voluntarily unemployed. This voluntary unemployment is not real unemployment. According to the classical thought, it is involuntary unemployment which is not possible in a free-market capitalist economy. All those workers who want to work at the wage rate determined by market forces will get employment.

During the period 1929-33 when there was a great depression in capitalist economies, a renowned neoclassical economist Pigou suggested a cut in wage rates in order to remove huge and widespread unemployment prevailing at that time. According to him, the cause of depression or unemployment was that the Government and trade unions of workers were preventing the free working of the capitalist economies and were artificially keeping the wage rates at high levels. He expressed the view that if the wage rates were cut down, the demand for labour would increase so that all would get employment.

It was at this time that J.M. Keynes challenged the classical theory and put forward a new theory of income and employment. He brought about a fundamental change in economic thought regarding the determination of income and employment in a developed capitalist economy. Therefore, it is often said that Keynes brought about a revolution in our economic theory.

Flexible interest rates, wages, and prices

Classical economists believe that under these circumstances, the

interest rate will fall, causing investors to demand more of the available savings. In fact, the interest rate will fall far enough—from i to i′ in Figure 1—to make the supply of funds from aggregate saving equal to the demand for funds by all investors. Hence, an increase in savings will lead to an increase in investment expenditures through a reduction of the interest rate, and the economy will always return to the natural level of real GDP. The flexibility of the interest rate as well as other prices is the self-adjusting mechanism of the classical theory that ensures that real GDP is always at its natural level. The flexibility of the interest rate keeps the money market, or the market for loanable funds**,** in equilibrium all the time and thus prevents real GDP from falling below its natural level.

Similarly, flexibility of the wage rate keeps the labor market or the market for workers**,** in equilibrium all the time. If the supply of workers exceeds firms' demand for workers, then wages paid to workers will fall so as to ensure that the work force is fully employed. Classical economists believe that any unemployment that occurs in the labor market or in other resource markets should be considered voluntary unemployment**.** Voluntarily unemployed workers are unemployed because they refuse to accept lower wages. If they would only accept lower wages, firms would be eager to employ them.

Thus, the Classical School believed that ‗real factors of production, combined with free markets would increase the wealth of a nation. In summary, Classical economics: a) stressed the role of real as opposed to monetary factors in determining real outcomes like output and employment. Money was considered strictly a medium of exchange not a causal factor in economic growth; and, b) stressed the role of the self-adjusting marketplace to ensure output and employment. Government had no role in ensuring adequate demand or employment other than essential infrastructure, e.g. roads, canals and competitive markets.

According to classical, there are two types of variables in the Classical Model (in fact in all the models we will study). These are endogenous (within the system – capital, labour, wage and price) and exogenous (outside the system – technology, population growth). In the Classical system the exogenous variables affect supply rather than demand. Thus if there is technological change then the MPN will change; if population increases or decreases the supply of labour will change. The Classical system does not consider demand to be a question. In effect, Say‘s Law is assumed to hold: supply creates its own demand, and, accordingly, there is never a lack of aggregate demand.

So far we have considered only the real wage rate (W/P) as playing a role. The question arises as to what effect changes in the money wage and money price will have on output. If money P or W change then the real wage will change. If the real wage changes there will also changes in the demand and supply of labour. Given the money wage, a firm will choose the quantity of labour where:

W = MPN x P or, the money wage equals the MPN times the Price of goods and services. If P increases then demand for labour will shift to the right, i.e. real wage falls; if P falls

Demand for labour will shift to the left. In fact the demand for labour is a function only of the real wage. A proportionate increase in W and P will

thus result in the same demand for labour. Thus if firms compete by raising money wages to attract workers other firms that do not increase the money wage will loose workers and eventually exit the industry. However, to pay the higher money wage firms must increase prices which decrease the real wages until equilibrium is re-established with a higher money wage, higher money prices but the same level of out as at the beginning of the process. In fact the aggregate supply curve under the Classical model is vertical. No matter the price level, money wages will adjust to maintain the real wage and the real level of output.

Thus, according to the classicals, output is determined purely by supply factors and demand plays no role. Similarly factors like the quantity of money, level of government spending, and demand for investment goods are all _demand'factors that play no role in determining output in the classical model. Taxes that affect supply-side factors will, however, affect output. However, factors affecting the classical equilibrium include changes in technology, reduction of the price of raw materials as well as growth of the capital stock. Thus, the Classical model is thus characterized by the supply-determined nature of real output and employment. The aggregate supply curve is vertical because of assumptions made about the labour market: (i) perfectly flexible wages and prices; and, implicitly, (ii) perfect information, and, of course, perfectly competitive industries.

Check your progress-1

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

1.What is Full EMployment?

3.2.Check your progress Questions.

Check your progress-2

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

2.What is Price Flexibility?

3.3.Answer to check your progress Questions.

1. Full employment is a condition of the national economy, where all or nearly all persons willing and able to work at the prevailing wages are able to work. The simplest definition of full employment is that it is a situation in the economic system characterized by the absence of involuntary unemployment.

2. **Price Flexibility:** The classical economists further believed that even if the rate of interest fails to equate saving and investment, any resulting decline in total spending would be neutralized by proportionate decline in the price level.

3.4.Summary

In this unit, you have learnt about in meaning of employement and income. This knowledge would make you understand classical theory of employement what is employment and how it can be worked at a economy. The concept such as employment and income would have made you to difference thise activities from the employment activities and you must have learnt about the employment and its levels in the economy context.

3.5.Key words

Classical Theory, Full Employment

3.6.Self Assessment Questions and Exercises.

Short Answer Questions

1.What is Price Flexibilty?

2.What is Wage Flexiblity?

Long answer Questions.

1.Explain Classical Theory of Full Employment?

2.Explain the relationship between employment and output?

3.7.Further Readings.

Seth, M.L. (1999), **“Macro Economics”,** Lakshmi Narayan Agarwal Publishers, New Delhi.

UNIT- 4: THEORY OF EMPLOYMENT - II: SAY'S LAW OF MARKET.

Structure:

4.1. Theory of Employment - II: Say's Law of Market.

John-Baptiste Say (1767-1832) is one of the most important and insightful thinkers in the history of economic science. Say was a major proponent of Adam Smith‘s self-directing economic system of competition, natural liberty, and limited government. J.B. Say was the original supply-sider and documented that production is the source (reason) of consumption and placed supply over demand in the hierarchy of economics. A person‘s ability to demand goods and services from others proceeds from the income produced by his own acts of production. His level of production determines his ability to demand. Demanding products requires money which, in turn, requires a prior act of supply. The production of goods causes income to be paid to those who produce. In other words, a person sells his labor services or assets for money which he then uses to demand products. In the end, when exchanges have been effected, it will be found that a person has paid for goods and services with other goods and services.

The demand for any commodity is a function of the supply of other commodities. Thus, Say's law, or the law of market, is an economic principle of classical economics. Say's law is based upon the fact that every production of goods also creates incomes equal to the value of goods produced and these incomes are spent on purchasing these goods. In other words, production of goods itself creates its own purchasing power. Therefore, Say's law is expressed as ―Supply creates its own demand‖. In other words, the supply of goods produced creates demand for it equal to its own value with the result that the problem of general overproduction does not arise. Say's law was generally accepted throughout the 19th century. Say‘s Law of Markets, a key component of the classical school of economics, describes the process through which supplies in general are translated into demands in general. For Say, the balance between aggregate supply and aggregate demand is an *ex ante* identity. From this perspective, supply equals demand only because of, and to the amount of, people‘s demand for other goods. Demand is supply seen from another angle. Because supply is demand there cannot be an excess of supply over demand. The demand for products can be said to be rooted in the production of

products.

Thus, according to Say's Law supply creates its own demand, i.e., the very act of producing goods and services generates an amount of income equal to the value of the goods produced. Say's Law can be easily understood under barter system where people produced (supply) goods to demand other equivalent goods. So, demand must be the same as supply. Say's Law is equally applicable in a modern economy. The circular flow of income model suggests this sort of relationship. For instance, the income created from producing goods would be just sufficient to demand the goods produced.

(b)Saving-Investment Equality: There is a serious omission in Say's Law. If the recipients of income in this simple model save a portion of their income, consumption expenditure will fall short of total output and supply would no longer create its own demand. Consequently there would be unsold goods, falling prices, reduction of production, unemployment and falling incomes.

However, the classical economists ruled out this possibility because they believed that whatever is saved by households will be invested by firms. That is, investment would occur to fill any consumption gap caused by savings leakage. Thus, Say's Law will hold and the level of national income and employment will remain unaffected.

(c)Saving-Investment Equality in the Money Market: The classical economists also argued that capitalism contained a very special market – the money market – which would ensure saving investment equality and thus would guarantee full employment. According to them the rate of interest was determined by the demand for and supply of capital. The demand for capital is investment and its supply is saving. The equilibrium rate of interest is determined by the saving-investment equality. Any imbalance between saving and investment would be corrected by the rate of interest. If saving exceeds investment, the rate of interest will fall. This will stimulate investment and the process will continue until the equality is restored. The converse is also true.

What Say stated was that the supply of a good constitutes demand for everything that is not that good. Aggregate supply thus creates its own aggregate demand. Within the context of a free market system, the supply of each producer makes up his demand for the supplies of other producers. Therefore, in the aggregate, demand always equals supply and the general overproduction of goods is meaningless and impossible. According to Say, it was possible to have a surplus or a shortage of any specific commodity. Production can be misdirected and too much of some products can be produced for which there is insufficient demand. He said that gluts of production did not occur through general overproduction, but instead through overproduction of certain goods in proportion to others which were under produced. Say thus admits that there can be short- term gluts of a particular commodity. The market, left to its own devices, permits such imbalances to be corrected through adjustments of prices and costs. Any disequilibrium in the economy exists only because the internal proportions of output differ from the proportions preferred by consumers and not because production is excessive in the aggregate. It follows that overproduction or a glut can only take place temporarily when too many means of production are applied to one type of product and not enough to others. This type of disequilibrium is

normally quickly remedied in a free market economy as market incentives and rational self-interest lead to adjustments in production, prices, marketing strategies, and so on. People have a rational self-interest in correcting their errors.

According to Say, savings is beneficial and it is used in the production of capital goods or in additional production. When production exceeds consumption, the difference is savings, which goes toward the production of investment goods, which are the basis for future growth. There will be no deficiency in aggregate demand as long as savings are reinvested in productive uses. Say argued that savings searching for profits goes quickly into investments for production. Say contended that money is a neutral mechanism through which aggregate supply is transformed into aggregate demand. He viewed money as an intermediate good that enables people to buy. In Say‘s system, money serves chiefly as a medium of exchange and was not explicitly identified as a store of wealth. He viewed inflation as a monetary phenomenon rather than the result of excessive employment and economic growth. Say viewed interest rates as the price of credit. He understood that market-determined interest rates perform the function of a market clearing price for money.

Assumptions of the Say's Law of Market:

The classical model is based mainly on the following four assumptions:

- **Pure competition exists.** No single buyer or seller of commodity or an input can affect its price.
- **Wages and prices are flexible.** The wages and prices of goods are free to move to whatever level the supply and demand dictates.
- **Self interest.** People are motivated by self interest. The businessmen want to maximize their profits and the households want to maximize their economic well being.
- **No government interference.** There is no necessity on the part of the government to intervene in the business matters.

Say's Law states that in a market economy, goods and services are produced for exchange with other goods and services. That is to say, the total supply of goods and services in a market economy will equal the total demand derived from consumption during any given time period. In other words, "general gluts cannot exist" although there may be local imbalances, with gluts in one market balanced by shortages in others. Nevertheless, for some neoclassical economists, Say's Law implies that economy is always at its full-employment level. Say's law implies that there cannot be a general glut, so that a persistent state in which demand is generally less than productive capacity and high unemployment results, cannot exist. Keynesians argued that the Great Depression demonstrated that Say's law is incorrect. Keynes, in his General Theory, argued that a country could go into a recession because of "lack of aggregate demand".

Say's Law in a Barter Economy

According to say, supply creates its own demand. This is explained as according to say, whatever is produced in the barter economy is sold out. Hence nothing remains unsold and there is no possibility of over production.

As a result, there is no possibility of general unemployment. For example, if a person produces cloth whiles the other produce the wheat, they both exchange with one another. Hence nothing will remain unsold and no producer will face losses. Consequently, there will be no unemployment. In the barter economy people produced goods either for their own use or to exchange them with the other goods. So in this process there is an aggregate demand as well as aggregate supply. Under this mechanism, it is the value of good which clears the market. If the price of one good is higher than that of another good, the resources will shift from the production of low value good to the production of high value good. In this way the value of the good will fall where the resources are moving and value of the good will rise where from the resources are coming out. In this way equalization process starts till equilibrium value is settled in the market.

Say's Law in a Money Economy

It is not easy to say what exactly Say's law says about the role of money apart from the claim that recession is not caused by lack of money. The phrase "products are paid for with products" is taken to mean that Say has a barter model of money. One can read Say as stating simply that money is completely neutral, although Say did not state that explicitly.

To Say, as with other Classical economists, it is quite possible for there to be a glut (excess supply, market surplus) for one product, and it co-exists with a shortage (excess demand) for others. But there is no "general glut" in Say's view, since the gluts and shortages cancel out for the economy as a whole. But what if the excess demand is for *money*, because people are hoarding it? This creates an excess supply for all products, a general glut. Say's answer is simple – there is no reason to engage in hoarding money.

According to Say, the only reason to have money is to buy products. It would not be a mistake, in his view, to treat the economy as if it were a Barter economy. However, in classical economics, there was no reason for persistent depressions, such as that of the 1930s, in a free market according to *laissez-faire* principles. The flexibility of markets under *laissez faire* allows prices, wages, and interest rates to adjust to abolish all excess supplies and demands.

During the worldwide Great Depression, in the first half of the 20th century, a school of economics arose that disputed Say's conclusions, called Keynesian economics. The debate between classical economics and Keynesian economics continues today. The need to offer a good to demand another good is obvious in a barter economy but also applies in a money economy. The whole of neoclassical equilibrium analysis implies that Say's law in the first place functioned to bring a market into this state – Say's law is the mechanism through which markets. Thus, Say's law says that free markets can solve the economy's problems automatically. Some proponents of Say's law argue that such intervention is always counterproductive. Consider Keynesian-type policies aimed at stimulating the economy. Increased government purchases of goods (or lowered taxes) merely "crowds out" the private sector's production and purchase of goods. According to Keynes, the implication of Say's "law" is that a free-market economy is always at full employment.

Keynes versus Say

For Keynes, the decision to save is not automatically coordinated

with the amount of investment needed and desired by businessmen. He says that whether or not entrepreneurs and businessmen invest depends upon a number of subjective and irrational psychological factors instead of simply depending on the availability of savings at a low interest rate. According to Keynes, too much savings in the economy is the cause of the unemployment of resources. He contended that the Say's system was only true in the special case when savings equals investment. He says that, because this is rarely the case, economists need a general theory to explain unemployment. Keynes believed that the breakdown of Say's Law came about because of a lack of aggregate demand which results from the disequilibrium of planned savings and planned investment. For Keynes, savings can be too high or too low. Either way, he considers savings to be dangerous, self-defeating, and the source of the problem. According to Keynes, savings is a destructive ―leakage‖ from the economy. In the end, Keynes concludes that (1) when savings are less than investment, government action is necessary to stimulate investment and (2) when savings are greater than investment, government action is needed to encourage consumption expenditures. In both cases, it is up to the government to step in.

4.2.Check your progress Questions.

Check your progress-1

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

Check your progress-2

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

1.What are the two assumptions of Say's law's of market?

………………………………………………………………………………

4.3.Answer to check your progress Questions.

1**.** Say's Law of Markets, a key component of the classical school of economics, describes the process through which supplies in general are translated into demands in general. For Say, the balance between aggregate supply and aggregate demand is an *ex ante* identity. From this perspective, supply equals demand only because of, and to the amount of, people's demand for other goods. Demand is supply seen from another angle. Because supply is demand there cannot be an excess of supply over demand. The demand for products can be said to be rooted in the production of products.

2. **Pure competition exists.** No single buyer or seller of commodity or an input can affect its price.

Wages and prices are flexible. The wages and prices of goods are free to move to whatever level the supply and demand dictates.

4.4.Summary

In this unit, you have learnt about the say's law of market. This knowledge would make you understand what is Say's Laws and how it can be working close can be working at a market. The concept such as supply and demand would have made you to distinguish these activities from the market activities and you might have learnt about meaning and its creates in the employment context.

4.5.Key words

Barter economy, Say's laws of market, Investment

4.6.Self Assessment Questions and Exercises.

Short Answer Questions

1.What is Say's Laws of Market?

2. What are the two assumptions of Say's law's of market?

Long answer Questions.

1.Explain the concepts of Say's Law's of Market?

2.Differentiate the Keynesian and Say's Law's of market?

4.7.Further Readings.

Vaish, M.C. (2005), **"Macro Economic Theory",** Vikas Publishing House, New Delhi.

UNIT-5: THEORY OF EMPLOYMENT - III

Keynesian Theory of Employment

Notes

Structure

5.1. Keynesian Theory of Employment

Consumption Function

Introduction

One of the important tools of the Keynesian economics is the consumption function. A consumption function is a functional statement of relationship between consumption expenditure and its determinants. Although, consumption expenditure of households depends on a number of factors such as income, wealth, rate of interest, expected future income, life style, age, sex etc; income is the primary determinant of consumption. Given this dictum, the consumption function or propensity to consume refers to the income consumption relationship. As the demand for a commodity depends upon its price, consumption of a commodity depends upon the level of income. In other words, consumption is a function of income. The consumption function relates the amount of consumption to the level of income. It is the functional relationship between two aggregates, that is, total consumption and the gross national income.

Symbolically, the consumption function can be represented as C = f (Y), where, ‗C‘is the consumption, ‗Y‘ is income and ‗f‘ if the functional relationship. Thus, the consumption function indicates a functional relationship between C and Y, where C is the dependent variable and Y is the independent variable. That is, C is determined by Y. This relationship is based on the ceteris paribus assumption. As such only income consumption relationship is considered and all other possible influences on consumption such as wealth, rate of interest, expectations about future income, life style, age and sex etc are held constant.

Consumption function should be carefully distinguished from the amount of consumption. By consumption function we mean the whole

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schedule which describes the amount of consumption at various levels of income whereas the amount of consumption means the amount consumed at specific level of income.

A hypothetical consumption schedule is given below

Income in Rs.	**Consumption in Rs,**
1000	750
1100	825
1200	900
1300	975
1400	1050
1500	1125

Although Keynes postulated a non-linear consumption function, it is a convention in the modern interpretation of Keynesian macro economics to use a linear consumption function. A linear consumption function can be expressed as

$$C = a + b Y$$

Where C is the aggregate consumption expenditure and Y is the total disposable income. The term ‗a'is the positive intercept coefficient that denotes the level of consumption when income is zero. The amount of consumption at zero income level is called autonomous consumption. The term ‗b'is the positive constant that represents the slope of consumption function.

Keynes thought that income is the primary determinant of consumption and that the rate of interest does not have an important role. This conjecture stood in stark contrast to the belief of classical economist who preceded him. The classical economist held that a higher interest rate encourages savings and discourages consumption. Keynes admitted that the interest rate could influence consumption as a matter of theory. Yet, he believed that short period influence of interest rate on individual spending out of a given income is secondary and relatively unimportant.

Properties or Technical Attributes of Consumption Function

The consumption function has two technical attributes or properties. They are

1) Average Propensity to Consume (APC)
2) Marginal Propensity to Consume (MPC)

1) Average Propensity to Consume (APC)

The APC is the ratio of consumption expenditure to any particular level of income. It is calculated by dividing consumption expenditure by income. That is APC = C/Y. APC is usually expressed in percentages. In the above consumption schedule, when income is Rs.1000, consumption expenditure is equal to Rs.750. Therefore, APC is 750/1000 = 0.75 or 75%.

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2) Marginal Propensity to Consume (MPC)

MPC refers to the relationship between marginal income and marginal consumption. It may be defined as the ratio of the change in consumption to the change in income. That is, MPC is found by dividing the change in consumption by the change in income. Thus, MPC = $\Delta C/\Delta Y$. It is the ratio of additional consumption to additional income. In the above consumption schedule, when income increases from Rs.1000 to Rs.1100, the consumption increases from Rs.750 to Rs.825. Here, the increment in income is Rs.100 and increment in consumption is Rs.75. Therefore, MPC which is $\Delta C/\Delta Y$ is equal to 75/100= 0.75.

Geometrically, MPC equals the slope of the consumption function. If the consumption function is a straight line (linear consumption function), MPC will be the same for any change in income. For example, if the consumption function take the following linear form

$$C = 200+0.75Y$$

Then, the MPC = 0.75 which is the slope of the consumption function.

Keynes is concerned primarily with the MPC because his analysis pertains to the short run while APC is useful in the long run analysis. MPC is assumed to be positive and less than unity ($0<MPC<1$) which means that when income increases, the whole of it is not spend on consumption. Thus, MPC will be low in the case of richer people and high in the case of poor. MPC was crucial to Keynes policy recommendations for how to reduce widespread unemployment. The power of fiscal policy to influence the economy arises from the feedback between income and consumption.

Keynes's Psychological Law of Consumption

Keynes propounded the fundamental psychological law of consumption in his famous book ―General Theory of Employment, Interest and Money‖ (1936) which forms the basis of consumption function. The law is a statement of psychological tendencies of the community with respect to consumption spending. It explains, given the level of income and the propensity to consume, how the people allocate their incomes between consumption and saving. Psychological law of consumption is considered as the most notable and revolutionary contribution of Keynes to the macro economic analysis. Instead of relying on statistical analysis, Keynes made conjectures about consumption based on introspection and casual observation.

Keynes stated his fundamental psychological law as follows

As a rule and on the average, to increase their consumption as their income increases, but not as much as the increase in income'. In other words, as income increases, people will spend part but not all of the increase, choosing instead to save some part of it. The law implies that there is a tendency on the part of the people to spend on consumption less than the full increment of income. There exist a non-proportional relationship between consumption and income which suggests that rising aggregate

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income should be associated with a higher national saving rate.

Propositions of the Law

Keynes's fundamental law of consumption essentially consists of three related propositions:

1. When income increases, consumption expenditure also increases but by a somewhat smaller amount. The reason is that as income increases, people's wants are satisfied side by side, so that the need to spend more on consumer good diminishes. As many of the wants have already been satisfied, there is less pressure to raise consumption in proportion to rise in income. Thus, though consumption expenditure increases with the increase in income, it increases less than proportionately. This proposition means that MPC is positive but less than unity ($0 < MPC < 1$) in normal circumstances.

2. The increased income will be divided in some proportion between consumption expenditure and saving. As a matter of fact, the second proposition is a corollary to the first proposition. When the whole increased income is not spend on consumption, the remaining is saved. In this way, consumption and saving move together. That is, $\Delta Y = \Delta C + \Delta S$.

3. Increase in income always leads to an increase in both consumption and saving. This means that an increment in income is unlikely to lead either to less consumption or less saving than before. This is based on the above propositions because as income increases, consumption also increases but by a smaller amount which also leads to an increased savings. Thus, with increased income, both consumption and saving increases.

These three propositions of Keynesian fundamental law of can be verified with the help of following hypothetical table.

Income (Y)	Consumption (C)	Saving (S = Y- C)
(in Rs)	(in Rs)	(in Rs)
0	20	-20
60	70	-10
120	120	0
180	170	10
240	220	20
300	270	30
360	320	40

Assumptions of the Law

Keynes fundamental law of consumption is based on the following three assumptions:

a) Constant Psychological and Institutional Complex

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The law is based on the assumption that the psychological and institutional complexes influencing consumption tendencies remain constant. Such complexities are income distribution, tastes, habits, customs, population's growth etc. In short run, they do not change. The assumption suggests that consumption function is stable in the short run and that whatever changes take place in consumption spending in the short run are primarily due to the changes in income

b) Normal conditions

The law assumes that the conditions are normal in the economic system. There is no war, revolution, hyperinflation or any other abnormal or extra ordinary situations. Under abnormal conditions, the consumption behavior of the community is likely to diverge in a significant way from the short run consumption behavior and people may spend the whole of increased income on consumption leading a situation where MPC become equal to unity or even exceed unity.

c) Existence of laissez faire capitalist economy

Keynes also assumes a wealthy capitalist economy with the minimum government intervention in economic activities. People should be free to spend the increased income. In the case of regulations of private enterprise and consumption expenditures by the state, the law breaks down. The law becomes inoperative in socialist system since government regulates the flow of income and consumption spending in the country.

Implications or Importance of the Law

Keynes‘s fundamental law of consumption has assumed vital importance in the modern economic analysis. It enabled Keynes and his followers to explode many classical myths and beliefs and lay foundations of modern economic analysis and policy. That is why the psychological law of consumption is regarded as a major breakthrough in modern economics and is rightly termed as epoch- making contribution of Keynes to economic theory.

1. Invalidation of Say‘s Law

The most far-reaching implication of the law is that it invalidates the Say‘s law of market. According to the Say‘s law, every supply creates its own demand. Therefore, general over production and unemployment is not possible because adequate amount of aggregate demand is ever-present. Now, according to Keynes‘s psychological law, when income increases, consumption also increases but by a smaller amount. Since MPC is less than one, demand fails to increase with an increase in income or output and supply fails to create its own demand. Rather, supply exceeds demand which leads to general over production and glut of commodities in the market. This will also leads to general unemployment in the economy. Thus, Say‘s law of market is completely exploded and entire super structure of classical analysis collapses along with it.

2. Crucial importance of investment

Keynes‘s psychological law of consumption is important because it brings out crucial significance of investment for the determination of the

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level income and employment in a capitalist economy. The law stresses the vital point that people fail to spend the full increment of income on consumption. This tendency creates a gap between income and consumption which can only be filled by increased investment. Since consumption function is stable in the short run, the only alternative left to maintain the higher level of income and employment is wipeout the saving gap through amount of investment. Thus, investment assumes the most crucial and strategic importance in the economy. It is inadequacy of investment which results in unemployment and the remedy to overcome it is increase in investment.

3. Existence of underemployment equilibrium

The most significant departure of Keynes from the classical analysis is in respect to the underemployment equilibrium. Keynes‘s notion of underemployment equilibrium is based on the psychological law of consumption. As consumers do not spend the full increment of their income on consumption, there remains a deficiency of aggregate demand in the economy. Since MPC is less than unity, aggregate demand fails to increase to the full employment level and equilibrium is established short of full employment.

4. Need for state intervention

The deficiency of consumption spending necessitates either an increase in consumption spending or an increase in investment expenditure to the extent equal to the gap between consumption and saving. However, the short run stability of consumption function emphasizes the necessity of raising the investment expenditure. Since private investment cannot increase up to an amount that may offset the over saving gap, the only way out is the government intervention in the economic sphere by undertaking autonomous investment. Thus, when consumption does not increase by the full increment of income and consequently there is general overproduction and mass unemployment, the necessity of state intervention arises in the economy to maintain maximum possible level of employment and output.

5. Declining tendency of Marginal Efficiency of Capital

The psychological law points out that the marginal efficiency of capital or the expected rate of profitability has a tendency to decline in the capitalist countries. The reason is that as income increases, consumption does not increase to the same extent. As a result, there is a fall in demand and glut of commodities in the market and expected rate of profit also declines.

6. Permanent over saving gap

Since MPC is less than unity, consumption expenditure increases relatively less than the increase in income. This implies that every increase in income causes an accumulation of savings. However, the condition for additional investment will not be conducive because of the declining rate of increase in consumption spending. This led to the possibility of continued existence of over saving gap in the capitalist economy.

7. Process of income generation

Keynes‘s investment multiplier coefficient explains the process of income generation in an economy. The theory of multiplier states that when investment increases, income will increase by a multiple amount depending

upon the magnitude of multiplier. The magnitude of the multiplier coefficient (k) is determined by the extent to which MPC is less than unity. In fact, the value of multiplier is k= 1/1-MPC. The higher the MPC, the higher will be the value of multiplier and greater will be the expansion or generation of income in the economy.

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8. Turning points of the business cycles

Keynes's fundamental law of consumption has made a significant breakthrough in the business cycle theory. It has tried to provide a satisfactory explanation to the turning points of the business cycles. Keynes point out that before the economy reaches the full employment level, the downturn starts because people fail to spend the full increment of their income on consumption. This leads to the fall in demand, over production, unemployment and decline in MEC. Conversely, the upturn in the economy starts before it reaches the stage of complete depression because as income falls, consumption also falls but less than the fall in income. So, when the excess stock of commodities is exhausted in the economy during the depression, the existence of consumer expenditure leads to the revival.

Determinants of the consumption function

By the determinants of consumption we mean the factors that influence the shape, position and slope of the consumption function. Keynes categorized consumption's non-income determinants into two broad groups but speculated that these non-income determinants were of minimum significance in explaining short run consumption. The two broad groups are

I .Subjective factors

I. Objective factors

Subjective factors primarily include the psychological attitude of the people towards consumption. They are psychological characteristics of human nature, social practices and institutional and social arrangements. Objective factors include changes in price level, fiscal policy, rate of interest, expectations, wealth etc which undergo rapid changes and can cause marked shifts in consumption function. The subjective and objective factors are explained below.

I .Subjective factors

As stated above, the subjective factors are the psychological characteristics of human nature, social practices and institutions, especially behavioral patterns of business firms and social arrangements affecting the distribution of income. According to Keynes, these subjective factors, though not alterable, are unlikely to undergo a material change over a short period of time except in abnormal circumstances.

A. Individual motives

Under the psychological characteristics of human nature, Keynes list out eight motives that make people to undertake less consumption spending or more saving. They are

i. People save because they want to provide for unforeseen contingencies (precaution)

ii. They want to provide for expected future needs (foresight)

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iii. People save from current income so as to use accumulated savings for investment which increase their future income (calculation)

iv. People are motivated to save so that they can accumulate large wealth and improve the standard of living (improvement)

v. People save to enjoy a sense of independence and power to do things (independence)

vi. People save so that they can use them for speculative purposes (enterprise)

vii. People save for the sake of leaving a good fortune for their heirs and children (pride)

viii. People save because of their miserly instinct and habits (miserliness)

B. Business motives

Subjective factors also lead business firms to save from their incomes. Keynes have listed four motives for saving on the part of business firms.

i. Enterprise: many business firms desire to save a part of their current income so that they can make investment in new enterprises and carryout expansion in future.

ii. Liquidity: business firms are induced to save so that they can face contingencies in future. If they have good amount of liquid wealth in their hands, they would be able to meet emergencies and difficulties successfully.

iii. Successful management: many managers of business firms are motivated to save to secure large incomes and to show successful management.

iv. Financial prudence: business forms desire to save to provide adequate financial resources against depreciation in plant and machinery, to repay their debts etc.

II. Objective factors

The subjective factors explained above remain constant during short run and keep consumption function stable. But the objective factors undergo rapid changes and causes shifts in the consumption function. Objective factors which influence consumption are explained below.

(i) Changes in the general price level

The general price level is an important factor which influences the consumption of a community. When general price level increases, the consumption function shifts downwards because rise in price level cause fall in real value of the people‘s money balances. Similarly, fall in price level cause an upward shift in the consumption function.

(ii) Change in wage rate

If wage rate rises, the consumption function shifts upwards. The workers, having high MPC, spend more out of their increased income. However, if the rise in wage rate is accompanied by a more than proportionate rise in price level, the real wage rate will fall. This tends to shift consumption function downward.

(iii) Fiscal policy

Changes in fiscal policy, especially taxation policy affects the consumption function. Heavy commodity taxation adversely affects the consumption function. Likewise, when government reduces taxes, consumption of the people increases. At the same time, increased public expenditure on welfare programmes tends to shift the consumption function upward.

(iv) Rate of interest

Substantial changes in the market rate of interest may influence the consumption function indirectly. It is generally believed that higher rate of interest induces people to save more and this results in reducing their propensity to consume. But, this is not true in the case of all the people. Some individuals, who want a certain fixed income in future might consume more and save less when rate of interest goes up, as they can obtain the given fixed income with lesser savings.

(v) Windfall gains and losses

Unexpected changes in the stock market leading to gains or losses tend to shift the consumption function upward or downward. When the prices of shares go up, the shareholders begin to think themselves better off and it causes an upward shift in their consumption function. On the other hand, when the prices of share go down, the shareholders have to suffer sudden losses and tend to reduce their consumption.

(vi) Changes in expectations

Changes in expectations also affect the propensity to consume. When people expect war in the near future and expect prices to go up, they will try to spend more to meet the needs of current period. This shifts the consumption function upward. On the contrary, if the prices are expected to fall in future, people would buy only essential goods. It will lead to a fall in consumption demand and to a downward shift in consumption function.

(vii) Income distribution

Distribution of income and wealth in the society also determines the shape of consumption function. If the national income is more unequally distributed, the lower will be the propensity to consume. This is because propensity to consume of the rich is relatively less as compared to that of poor. If inequalities are reduced, the consumption function will shift upward because with the increase in income of the poor, their consumption expenditure will increase more than the reduction in the expenditure of the rich.

(viii) Stock of wealth

The stock of wealth owned by households is an important factor that determines the propensity to consume. Pigou attempted to explain the effect

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of an increased stock of wealth upon consumption and saving. He point out that with addition in real wealth, there is lesser tendency amoung wealth-holders to add further to their amount of wealth. This wealth effect leads to an increase in spending and upward shift in consumption function.

(ix) Consumer credit

The availability of easy credit causes an increase in consumption and shifts consumption function upwards. The easy credit terms permit an increased volume of consumer spending with the purchases occurring earlier than they otherwise would be. On the other hand, tightening of credit produces an opposite effect. That is, it causes a downward shift in the consumption function.

II. The Saving Function

Concept

Saving is defined as that part of disposable income which is not spend on consumption. We know that disposable income is either consumed or saved. Thus,

Y=C+S
S=Y-C
Where, Y= disposable income
C= consumption
S= saving

This is shown in the following table

Income	Consumption	Saving
0	20	-20
40	50	10
80	80	0
120	110	10
160	140	20

The saving function is the counterpart of the consumption function. Like consumption, saving is also a function of disposable income. Thus, saving function can be written as S = f (Y). Given a particular consumption function, we can derive the saving function. For instance, given Keynesian

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linear consumption function

$$C = a + bY$$

The saving function can be easily derived as follows Since S = Y-C,

we have S = Y – (a + bY)
S = Y-a-bY S = -
a+Y-bY

In the equation, the term ‗1-b‘ is the value of marginal propensity to save, where ‗b‘ is the value of marginal propensity to consume. In the above table, when income is zero, saving is -20. Savings are negative till income rises to Rs 80. Positive savings take place only after income rises above Rs 80. The saving function will take the form S = - 20+ 0.25Y.

Average Propensity to Save

The saving counterpart to the APC is the average propensity to save or APS. APS is the proportion of the disposable income that is saved. Mathematically, APS is the ratio of saving to income. That is, APS = S/Y. For example, in the previous table, when income is Rs 160, Rs 20 is saved. Thus, APS = S/Y=20/160=0.125. It should be noted that since income can either be consumed or saved (Y = C+S), the two ratios, that is APC and APS must be add up to one. That is, APC + APS =1 or APS = 1-APC. Following our example, when income is Rs 160, APS = 0.125 and APC = C/Y=140/160 =0.875.

Therefore, we have 0.125+0.875=1

Marginal Propensity to Save

Whereas APS indicates the proportion of income that is saved, marginal propensity to save (MPS) represents how much of the additional disposable income is devoted to saving. Therefore MPS is the change in savings induced by the change in disposable income. As a saving counterpart of MPC, MPS is computed as the ratio of change in saving to change in income. Thus MPS = $\Delta S/\Delta Y$.

In the above table, when income increases from Rs 120 to Rs 160, the saving increases from Rs 10 to Rs 20. Here the increment in income is 40 and increment in savings is 10. Therefore, MPS = $\Delta S/\Delta Y$=10/40=0.25. Since additional income is either be consumed or saved, the sum of marginal propensities of consume and save is equal to one. That is, MPC+MPS=1 or MPS = 1-MPC. If MPC is positive but less than one, then it follows that MPS must also be positive but less than one. Furthermore, if the MPC decreases steadily as income rises, then MPS must increase steadily as income rises because these two ratios must add up to one at all levels of income.

Paradox of Thrift

The classical writers maintained that hard work, restrain from consumption spending and thrift (desire to save more) are great economic virtues. Thriftiness or saving was regarded as an act of prudence on the part of individuals. According to classical prescriptions, minimum spending and highest possible level of savings will always bring definite improvement in the individual‘s or firm‘s financial position. So thriftiness, according to them was key to prosperity. Savings determine investment which plays a crucial

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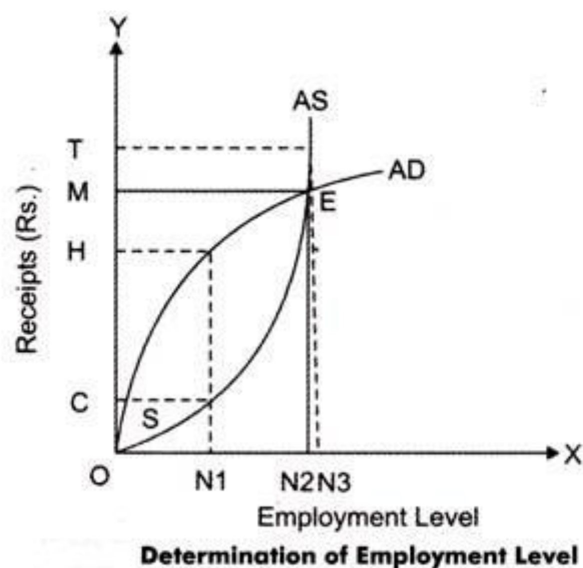
role in accelerating the rate of economic growth. They regarded savings not only a private but also a social virtue. An accumulation of savings by all individuals in the community would ensure higher rate of accumulation by the community and progressive growth of the economy would be easily realized. The logic is based on the well known classical assumption that savings and investment remain always balanced with each other

J M Keynes contradicted this widely held belief. In his opinion, savings is a virtue in the case of individuals but no for the society as a whole. The paradox of thrift emerges when all individuals in the society starts saving more than before out of the given level of income. The increased savings causes reduction in consumption spending. This will lower the aggregate demand for goods and services and cumulative decline in national income. As income falls, the investment activity will also go down considerably and hence the accumulation of social savings brings about eventual destruction of capital. Thus, paradox of thrift shows that the efforts to save more may actually deepen economic crisis and cause output and income to fall and unemployment to increase. It is called paradox because in their attempt to save more, the people have caused a decline in their income and consumption with no increase in the savings of the society at all.

5.2. Determinants of Equilibrium Level of Employment

Determination of Equilibrium Level of Employment:
The aggregate demand price and aggregate supply price help in determining the equilibrium level of employment.

The aggregate demand (AD) and aggregate supply (AS) curve are used for determining the equilibrium level of employment, as shown in Figure:



Determination of Employment Level

In Figure AD represents the aggregate demand curve, while AS represents the aggregate supply curve. It can be interpreted from Figure that although the aggregate demand and aggregate supply curve are moving in the same direction, but they are not alike. There are different aggregate demand price and aggregate supply price for different levels of employment.

For example, in Figure, at AS curve, the organization would employ ON_1 number of workers, when they receive OC amount of sales receipts.

Similarly, in case of AD curve, the organization would employ ON_1 number of workers with the expectation that they would produce OH amount of sales receipt for them.

The aggregate demand price exceeds the aggregate supply price or vice versa at some levels of employment. For example, at ON_1 employment level, the aggregate demand price (OH) is greater than the aggregate supply price (OC). However, at certain level of employment, the aggregate demand price and aggregate supply price become equal.

At this point, aggregate demand and aggregate supply curve intersect each other. This point of intersection is termed as the equilibrium level of employment. In Figure, point E represents the equilibrium level of employment because at this point, the aggregate demand curve and aggregate supply curve intersect each other.

In Figure, initially, there is a slow movement in the AS curve, but after a certain point of time it shows a sharp rise. This implies that when a number of workers increases initially, the cost incurred for production also increases but at a slow rate. However, when the amount of sales receipt increases, the organization starts employing more and more workers. In Figure, the ON_1 numbers of workers are employed, when OT amount of sales receipts are received by the organization.

On the other hand, the AD curve shows a rapid increase initially, but after some time it gets flattened. This means that the expected sales receipts increase with an increase in the number of workers. As a result, the expectations of the organization to earn more profit increases. As a result, the organization start employing more workers. However, after a certain level, the increase in employment level would not show an increase in the amount of sales receipts.

In Figure, before reaching the employment level of ON_2, the employment level keeps on increasing as the organizations want to higher more and more workers to get the maximum profit. However, when the employment level crosses the ON_{21} level, the AD curve is below the AS curve, which shows that the aggregate supply price exceeds the aggregate demand price. As a result, the organization would start incurring losses; therefore would reduce the employment rate.

Thus, the economy would be in equilibrium when the aggregate supply price and aggregate demand price become equal. In other words, equilibrium can be achieved when the amount of sales receipt necessary and the amount of sales receipt expected to be received by the organization at a specified level of employment are equal.

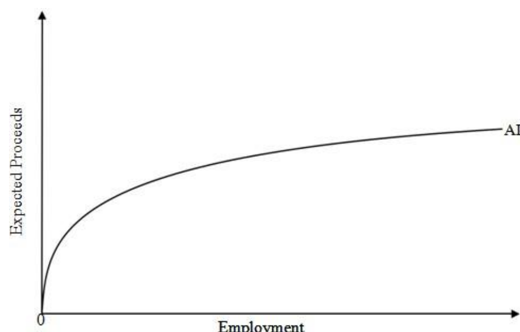
5.3. Aggregate Demand and Aggregate Supply Function.

Principle of Effective Demand

In the Keynesian theory of income and employment determination, principle of effective demand occupies a significant place. In the capitalist economy, the level of employment depends upon the level of aggregate effective demand. According to Keynes, effective demand is determined by aggregate supply and aggregate demand. Only that level of demand is effective where aggregate demand and supply are fully matched and entrepreneurs have no tendency either to expand or contract output and employment. We can now analyse the concepts of aggregate supply and

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aggregate demand and how their interaction determines the equilibrium level of income and employment.



Aggregate Demand Function

The major analytical tool employed by Keynes in the determination of income and employment is aggregate demand function. According to Keynes, aggregate demand function means the amount of money or proceeds that all the entrepreneurs in the economy taken together expect to receive from the sale of output produced by the given number of workers employed. In other words, aggregate demand price, represents the amount of expenditure actually expected by the entrepreneurs when a given number of workers are employed to produce goods and services. The aggregate demand schedule does not represent any particular or actual level of demand; it is simply the possible level of demand for different categories of goods and services. Thus, aggregate demand is an *ex-ante* concept.

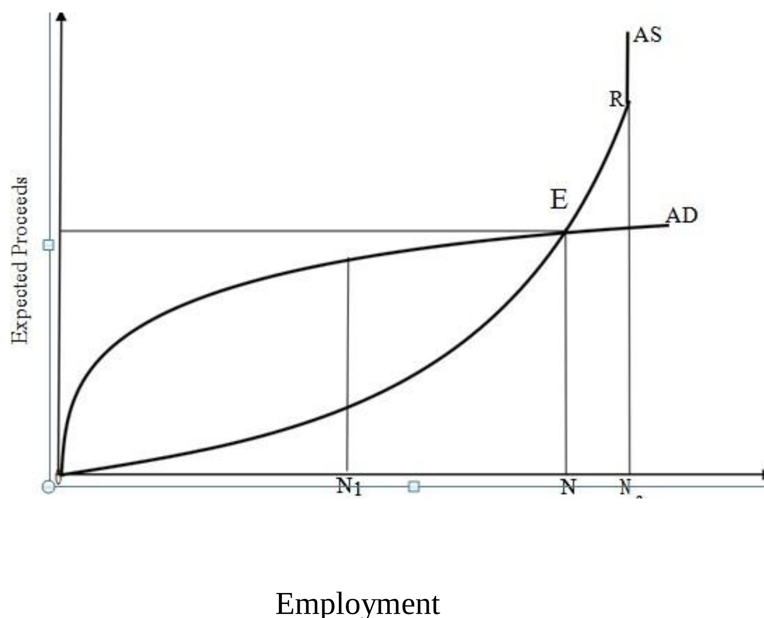
In a two sector economic model consisting of households and business sector, the level of aggregate demand is determined by aggregating the expected expenditures on the consumer goods and services and in the investment goods. Thus, aggregate demand is determined by the consumption demand and investment demand. The aggregate demand can be expressed as D = C + I. As said above, consumption demand depends on disposable income on the one hand, and propensity to consume on the other. According to Keynes, investment is determined by marginal efficiency of capital (MEC) and rate of interest. While rate of interest is more or less sticky, it is the changes in MEC that cause frequent changes in inducement to invest. According to Keynes, the aggregate demand function is an increasing function of the level of employment. Thus we can construct aggregate demand curve showing different aggregate demand prices at different levels of employment. Aggregate demand also rises from left to the right. This is because as the level of employment increases, aggregate demand price also rises, as shown below.

Effective Demand and Determination of Employment

As said above, aggregate supply curve shows the receipts which must be received by the entrepreneurs so as to provide employment to given number of laborers whereas aggregate demand curve shows proceeds which entrepreneurs actually expects to receive at different levels of employment. These aggregate demand and aggregate supply curves determine the level of employment in the economy. The equilibrium level of employment is determined at the point where demand price aggregate equals the aggregate supply price. In other words, it is the point where what the entrepreneurs

_expects to receive‘equals what they _must receive‘and their profits are maximized. This point is called the effective demand. Effective demand is that aggregate demand price which becomes _effective‘because it is equal to aggregate supply price and thus represents short run equilibrium. So long as aggregate demand price is

Notes



Employment

Higher than aggregate supply price, the prospects of getting additional profits are greater when more workers are provided employment. The expected proceeds (revenue) rise more than proceeds necessary (cost). This process will continue till the aggregate demand price equals aggregate supply price and the point of effective demand is reached.

It is not necessary that the equilibrium level of employment is always at full employment. Equality between aggregate demand and aggregate supply does not necessarily indicate the full employment level. The economy can be in equilibrium at less than full employment or underemployment equilibrium can exist. The classical economists denied that there would be equilibrium at less than full employment because they believed that supply creates its own demand and therefore deficiency of aggregate demand would not be experienced. Keynes demolished the classical thesis of full employment and point out that deficiency of aggregate demand can cause underemployment equilibrium. The following figure illustrates the principle of effective demand and the determination of equilibrium level of employment.

AD is the aggregate demand function and AS is the aggregate supply function. Aggregate demand curve and aggregate supply curve intersects at point E. this is the effective demand where $0N_2$ workers are employed. At less than $0N_2$ level of employment, say at $0N_1$, aggregate demand curve lies above aggregate supply curve showing that it is profitable to expand the amount of employment. However, it would not be profitable for the entrepreneurs to increase employment below $0N_2$, as AD lies below AS and they incur losses. Thus, E, the point of effective demand determines actual level of employment in the economy.

It can be noticed that the equilibrium at E represents underemployment or

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less than full employment level. At equilibrium level of employment $0N_2$, the N_2N_f persons remain unemployed. It is important to note that N_2N_f persons are involuntarily unemployed. They are willing to work at the existing wage rates but are unable to find jobs. This unemployment is due to deficiency of aggregate demand. It follows that, to raise the economy to the level of full employment, requires the raising the point of effective demand by increasing the aggregate demand. The unemployment will be removed and full employment will be reached if through increase in investment demand or increase in consumption demand or both, aggregate demand curve shifts upwards so that it intersects aggregate supply curve at point R. With the intersection of aggregate demand and aggregate supply at point R, equilibrium will be stabled at full employment level $0N_f$.

Aggregate Supply Function

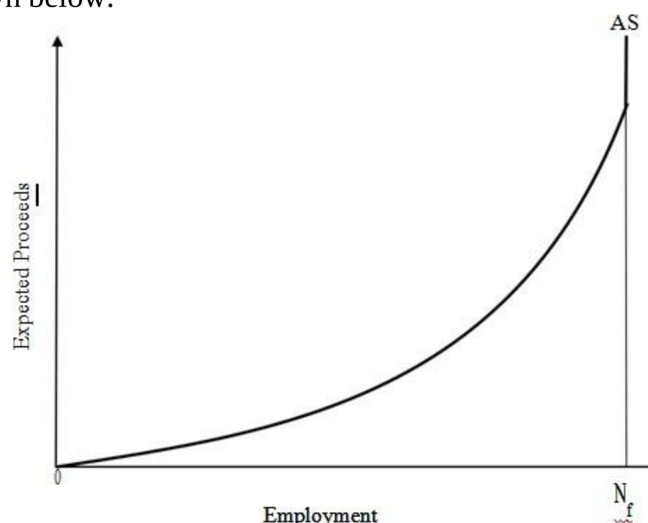
In his General Theory, Keynes relates aggregate supply function to varying levels of employment. It is based on the assumption that labour is the only resource and the only cost which must be covered by the sale proceeds. At any level of employment of labour, aggregate supply price is the total amount of money which all the entrepreneurs in the economy taken together, must expect to receive from the sale of output produced by the given number of labours employed, if it is just worth employing them. Aggregate supply price, at given level of employment, according to Keynes, is the expectation of proceeds which will just make it worthwhile for the entrepreneurs to employ that number of workers. It is the minimum proceeds which the entrepreneurs expect to recover from the sale of output. We can represent aggregate supply faction as a schedule of various aggregate supply prices at different levels of employment. That is, each level of employment in the economy is related to a particular aggregate supply price and there are different aggregate supply prices for different levels of employment as shown in the following table.

Levels of employment (in lakhs of workers)	Aggregate Supply Price (in crores of Rs)
10	200
20	220
30	240
40	260
50	280
50	300

The above table represents varying levels of aggregate supply prices at different levels of employment. It reveals that the aggregate supply price rises with the increase in level of employment. If the entrepreneurs are to provide employment to 20 lakh workers, they must receive Rs 220 crores from the sale of output produced by them. If the level of employment is 40 lakh the aggregate supply price is 260 crores which is the minimum proceeds

expected to receive to sustain such level of employment. But when the economy reaches the level of full employment (50 lakh) aggregate supply price continues to increase but there is no further increase in employment. According to Keynes, the aggregate supply function is an increasing function of the level of employment. But when the economy reaches full employment, aggregate supply function becomes perfectly inelastic. Aggregate supply function is linear. But if wage rate also increases long with the expansion in employment, the aggregate supply function follows a nonlinear path as shown below.

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The curve of aggregate supply function starts from the point of origin and slopes upwards to the right because as the necessary expected proceeds increase, the level of employment also increases. But when the economy reaches full employment limit, as indicated by N_f, the aggregate supply curve becomes vertical. Even with the increase in aggregate supply price it is not possible to provide more employment as the economy has attained the level of full employment.

5.4.Check your progress Questions.

Check your progress-1

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

1.What is MPC?

Check your progress-2

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

1.What is APC?

…………………………………………………………………………………

5.5.Answer to check your progress Questions.

1. MPC refers to the relationship between marginal income and marginal consumption. It may be defined as the ratio of the change in consumption to the change in income. That is, MPC is found by dividing the change in consumption by the change in income. Thus, MPC = $\Delta C/\Delta Y$.

Notes

2. The saving counterpart to the APC is the average propensity to save or APS. APS is the proportion of the disposable income that is saved. Mathematically, APS is the ratio of saving to income. That is, APS = S/Y.

5.6.Summary

In this unit you have leart about the meaning, definition and conept of equilibrium level of employment. This knowledge would make you understand what is aggregate demand and how it can be worked at a employment level. The concept such as aggregate demand and aggregate supply would have made you to distinguish these activities from the employment activities and you must have learnt about the concept and its working as the employment context.

5.7.Key words

MPC, MEC

5.8.Self Assessment Questions and Exercises.

Short Answer Questions

1.What is MPC?

2.What is MEC?

Long answer Questions.

1.Explain ?

2.Explain Aggregate Demand and aggregate Supply function?

5.9.Further Readings.

1.Ahuja, H.L. (2000), **"Macro Economics",** S. Chand and Company, New Delhi.

UNIT – 6 CONSUMPTION FUNCTION

Structure

6.1.Consumption Function

One of the important tools of the Keynesian economics is the consumption function. A consumption function is a functional statement of relationship between consumption expenditure and its determinants. Although, consumption expenditure of households depends on a number of factors such as income, wealth, rate of interest, expected future income, life style, age, sex etc; income is the primary determinant of consumption. Given this dictum, the consumption function or propensity to consume refers to the income consumption relationship. As the demand for a commodity depends upon its price, consumption of a commodity depends upon the level of income. In other words, consumption is a function of income. The consumption function relates the amount of consumption to the level of income. It is the functional relationship between two aggregates, that is, total consumption and the gross national income.

Symbolically, the consumption function can be represented as C = f (Y), where, _C‘is the consumption, _Y‘ is income and _f‘ if the functional relationship. Thus, the consumption function indicates a functional relationship between C and Y, where C is the dependent variable and Y is the independent variable. That is, C is determined by Y. This relationship is based on the ceteris paribus assumption. As such only income consumption relationship is considered and all other possible influences on consumption such as wealth, rate of interest, expectations about future income, life style, age and sex etc are held constant.

Consumption function should be carefully distinguished from the amount of consumption. By consumption function we mean the whole schedule which describes the amount of consumption at various levels of income whereas the amount of consumption means the amount consumed at specific level of income.

A hypothetical consumption schedule is given below

Notes

Income in Rs.	Consumption in Rs,
1000	750
1100	825
1200	900
1300	975
1400	1050
1500	1125

Although Keynes postulated a non-linear consumption function, it is a convention in the modern interpretation of Keynesian macro economics to use a linear consumption function. A linear consumption function can be expressed as

$$C = a + b\,Y$$

Where C is the aggregate consumption expenditure and Y is the total disposable income. The term ‗a‘is the positive intercept coefficient that denotes the level of consumption when income is zero. The amount of consumption at zero income level is called autonomous consumption. The term ‗b‘is the positive constant that represents the slope of consumption function.

Keynes thought that income is the primary determinant of consumption and that the rate of interest does not have an important role. This conjecture stood in stark contrast to the belief of classical economist who preceded him. The classical economist held that a higher interest rate encourages savings and discourages consumption. Keynes admitted that the interest rate could influence consumption as a matter of theory. Yet, he believed that short period influence of interest rate on individual spending out of a given income is secondary and relatively unimportant.

6.2. Theories of Consumption Function

Properties or Technical Attributes of Consumption Function

The consumption function has two technical attributes or properties. They are

1) Average Propensity to Consume (APC)
2) Marginal Propensity to Consume (MPC)

1) Average Propensity to Consume (APC)

The APC is the ratio of consumption expenditure to any particular level of income. It is calculated by dividing consumption expenditure by

income. That is APC = C/Y. APC is usually expressed in percentages. In the above consumption schedule, when income is Rs.1000, consumption expenditure is equal to Rs.750. Therefore, APC is 750/1000 = 0.75 or 75%.

2) Marginal Propensity to Consume (MPC)

MPC refers to the relationship between marginal income and marginal consumption. It may be defined as the ratio of the change in consumption to the change in income. That is, MPC is found by dividing the change in consumption by the change in income. Thus, MPC = $\Delta C/\Delta Y$. It is the ratio of additional consumption to additional income. In the above consumption schedule, when income increases from Rs.1000 to Rs.1100, the consumption increases from Rs.750 to Rs.825. Here, the increment in income is Rs.100 and increment in consumption is Rs.75. Therefore, MPC which is $\Delta C/\Delta Y$ is equal to 75/100= 0.75.

Geometrically, MPC equals the slope of the consumption function. If the consumption function is a straight line (linear consumption function), MPC will be the same for any change in income. For example, if the consumption function take the following linear form

$$C = 200+0.75Y$$

Then, the MPC = 0.75 which is the slope of the consumption function.

Keynes is concerned primarily with the MPC because his analysis pertains to the short run while APC is useful in the long run analysis. MPC is assumed to be positive and less than unity ($0<MPC<1$) which means that when income increases, the whole of it is not spend on consumption. Thus, MPC will be low in the case of richer people and high in the case of poor. MPC was crucial to Keynes policy recommendations for how to reduce widespread unemployment. The power of fiscal policy to influence the economy arises from the feedback between income and consumption.

Keynes's Psychological Law of Consumption

Keynes propounded the fundamental psychological law of consumption in his famous book ―General Theory of Employment, Interest and Money‖ (1936) which forms the basis of consumption function. The law is a statement of psychological tendencies of the community with respect to consumption spending. It explains, given the level of income and the propensity to consume, how the people allocate their incomes between consumption and saving. Psychological law of consumption is considered as the most notable and revolutionary contribution of Keynes to the macro economic analysis. Instead of relying on statistical analysis, Keynes made conjectures about consumption based on introspection and casual observation.

Keynes stated his fundamental psychological law as follows

―…..men are disposed, as a rule and on the average, to increase their consumption as their income increases, but not as much as the increase in income'. In other words, as income increases, people will spend part but not all of the increase, choosing instead to save some part of it. The law implies that there is a tendency on the part of the people to spend on consumption less than the full increment of income. There exist a non-proportional relationship between consumption and income which suggests that rising aggregate income should be associated with a higher national saving rate.

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Propositions of the Law

Keynes‘s fundamental law of consumption essentially consists of three related propositions:

1. When income increases, consumption expenditure also increases but by a somewhat smaller amount. The reason is that as income increases, people‘s wants are satisfied side by side, so that the need to spend more on consumer good diminishes. As many of the wants have already been satisfied, there is less pressure to raise consumption in proportion to rise in income. Thus, though consumption expenditure increases with the increase in income, it increases less than proportionately. This proposition means that MPC is positive but less than unity ($0 < MPC < 1$) in normal circumstances.

2. The increased income will be divided in some proportion between consumption expenditure and saving. As a matter of fact, the second proposition is a corollary to the first proposition. When the whole increased income is not spend on consumption, the remaining is saved. In this way, consumption and saving move together. That is, $\Delta Y = \Delta C + \Delta S$.

3. Increase in income always leads to an increase in both consumption and saving. This means that an increment in income is unlikely to lead either to less consumption or less saving than before. This is based on the above propositions because as income increases, consumption also increases but by a smaller amount which also leads to an increased savings. Thus, with increased income, both consumption and saving increases.

These three propositions of Keynesian fundamental law of can be verified with the help of following hypothetical table.

Income (Y)	Consumption (C)	Saving (S = Y- C)
(in Rs)	(in Rs)	(in Rs)
0	20	-20
60	70	-10
120	120	0
180	170	10
240	220	20
300	270	30
360	320	40

Assumptions of the Law

Keynes fundamental law of consumption is based on the following three

assumptions:

a) Constant Psychological and Institutional Complex

The law is based on the assumption that the psychological and institutional complexes influencing consumption tendencies remain constant. Such complexities are income distribution, tastes, habits, customs, population's growth etc. In short run, they do not change. The assumption suggests that consumption function is stable in the short run and that whatever changes take place in consumption spending in the short run are primarily due to the changes in income

b) Normal conditions

The law assumes that the conditions are normal in the economic system. There is no war, revolution, hyperinflation or any other abnormal or extra ordinary situations. Under abnormal conditions, the consumption behavior of the community is likely to diverge in a significant way from the short run consumption behavior and people may spend the whole of increased income on consumption leading a situation where MPC become equal to unity or even exceed unity.

c) Existence of laissez faire capitalist economy

Keynes also assumes a wealthy capitalist economy with the minimum government intervention in economic activities. People should be free to spend the increased income. In the case of regulations of private enterprise and consumption expenditures by the state, the law breaks down. The law becomes inoperative in socialist system since government regulates the flow of income and consumption spending in the country.

Implications or Importance of the Law

Keynes‘s fundamental law of consumption has assumed vital importance in the modern economic analysis. It enabled Keynes and his followers to explode many classical myths and beliefs and lay foundations of modern economic analysis and policy. That is why the psychological law of consumption is regarded as a major breakthrough in modern economics and is rightly termed as epoch- making contribution of Keynes to economic theory.

1. Invalidation of Say‘s Law

The most far-reaching implication of the law is that it invalidates the Say‘s law of market. According to the Say‘s law, every supply creates its own demand. Therefore, general over production and unemployment is not possible because adequate amount of aggregate demand is ever-present. Now, according to Keynes‘s psychological law, when income increases, consumption also increases but by a smaller amount. Since MPC is less than one, demand fails to increase with an increase in income or output and supply fails to create its own demand. Rather, supply exceeds demand which leads to general over production and glut of commodities in the market. This will also leads to general unemployment in the economy. Thus, Say‘s law of market is completely exploded and entire super structure of classical analysis collapses along with it.

2. Crucial importance of investment

Keynes‘s psychological law of consumption is important because it

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brings out crucial significance of investment for the determination of the level income and employment in a capitalist economy. The law stresses the vital point that people fail to spend the full increment of income on consumption. This tendency creates a gap between income and consumption which can only be filled by increased investment. Since consumption function is stable in the short run, the only alternative left to maintain the higher level of income and employment is wipeout the saving gap through amount of investment. Thus, investment assumes the most crucial and strategic importance in the economy. It is inadequacy of investment which results in unemployment and the remedy to overcome it is increase in investment.

3. Existence of underemployment equilibrium

The most significant departure of Keynes from the classical analysis is in respect to the underemployment equilibrium. Keynes's notion of underemployment equilibrium is based on the psychological law of consumption. As consumers do not spend the full increment of their income on consumption, there remains a deficiency of aggregate demand in the economy. Since MPC is less than unity, aggregate demand fails to increase to the full employment level and equilibrium is established short of full employment.

4. Need for state intervention

The deficiency of consumption spending necessitates either an increase in consumption spending or an increase in investment expenditure to the extent equal to the gap between consumption and saving. However, the short run stability of consumption function emphasizes the necessity of raising the investment expenditure. Since private investment cannot increase up to an amount that may offset the over saving gap, the only way out is the government intervention in the economic sphere by undertaking autonomous investment. Thus, when consumption does not increase by the full increment of income and consequently there is general overproduction and mass unemployment, the necessity of state intervention arises in the economy to maintain maximum possible level of employment and output.

5. Declining tendency of Marginal Efficiency of Capital

The psychological law points out that the marginal efficiency of capital or the expected rate of profitability has a tendency to decline in the capitalist countries. The reason is that as income increases, consumption does not increase to the same extent. As a result, there is a fall in demand and glut of commodities in the market and expected rate of profit also declines.

6. Permanent over saving gap

Since MPC is less than unity, consumption expenditure increases relatively less than the increase in income. This implies that every increase in income causes an accumulation of savings. However, the condition for additional investment will not be conducive because of the declining rate of increase in consumption spending. This led to the possibility of continued existence of over saving gap in the capitalist economy.

7. Process of income generation

Keynes's investment multiplier coefficient explains the process of

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income generation in an economy. The theory of multiplier states that when investment increases, income will increase by a multiple amount depending upon the magnitude of multiplier. The magnitude of the multiplier coefficient (k) is determined by the extent to which MPC is less than unity. In fact, the value of multiplier is k= 1/1-MPC. The higher the MPC, the higher will be the value of multiplier and greater will be the expansion or generation of income in the economy.

8. Turning points of the business cycles

Keynes‘s fundamental law of consumption has made a significant breakthrough in the business cycle theory. It has tried to provide a satisfactory explanation to the turning points of the business cycles. Keynes point out that before the economy reaches the full employment level, the downturn starts because people fail to spend the full increment of their income on consumption. This leads to the fall in demand, over production, unemployment and decline in MEC. Conversely, the upturn in the economy starts before it reaches the stage of complete depression because as income falls, consumption also falls but less than the fall in income. So, when the excess stock of commodities is exhausted in the economy during the depression, the existence of consumer expenditure leads to the revival.

Determinants of the consumption function

By the determinants of consumption we mean the factors that influence the shape, position and slope of the consumption function. Keynes categorized consumption‘s non-income determinants into two broad groups but speculated that these non-income determinants were of minimum significance in explaining short run consumption. The two broad groups are
I .Subjective factors

I. Objective factors

Subjective factors primarily include the psychological attitude of the people towards consumption. They are psychological characteristics of human nature, social practices and institutional and social arrangements. Objective factors include changes in price level, fiscal policy, rate of interest, expectations, wealth etc which undergo rapid changes and can cause marked shifts in consumption function. The subjective and objective factors are explained below.

<u>I .Subjective factors</u>

As stated above, the subjective factors are the psychological characteristics of human nature, social practices and institutions, especially behavioral patterns of business firms and social arrangements affecting the distribution of income. According to Keynes, these subjective factors, though not alterable, are unlikely to undergo a material change over a short period of time except in abnormal circumstances.

A. Individual motives

Under the psychological characteristics of human nature, Keynes list out eight motives that make people to undertake less consumption spending or more saving. They are

i. People save because they want to provide for unforeseen contingencies (precaution)

ii. They want to provide for expected future needs (foresight)

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iii. People save from current income so as to use accumulated savings for investment which increase their future income (calculation)

iv. People are motivated to save so that they can accumulate large wealth and improve the standard of living (improvement)

v. People save to enjoy a sense of independence and power to do things (independence)

vi. People save so that they can use them for speculative purposes (enterprise)

vii. People save for the sake of leaving a good fortune for their heirs and children (pride)

viii. People save because of their miserly instinct and habits (miserliness)

B. Business motives

Subjective factors also lead business firms to save from their incomes. Keynes have listed four motives for saving on the part of business firms.

i. Enterprise: many business firms desire to save a part of their current income so that they can make investment in new enterprises and carryout expansion in future.

ii. Liquidity: business firms are induced to save so that they can face contingencies in future. If they have good amount of liquid wealth in their hands, they would be able to meet emergencies and difficulties successfully.

iii. Successful management: many managers of business firms are motivated to save to secure large incomes and to show successful management.

iv. Financial prudence: business forms desire to save to provide adequate financial resources against depreciation in plant and machinery, to repay their debts etc.

Objective factors

The subjective factors explained above remain constant during short run and keep consumption function stable. But the objective factors undergo rapid changes and causes shifts in the consumption function. Objective factors which influence consumption are explained below.

(i) Changes in the general price level

The general price level is an important factor which influences the consumption of a community. When general price level increases, the consumption function shifts downwards because rise in price level cause fall in real value of the people‘s money balances. Similarly, fall in price level cause an upward shift in the consumption function.

(ii) Change in wage rate

If wage rate rises, the consumption function shifts upwards. The workers, having high MPC, spend more out of their increased income. However, if the rise in wage rate is accompanied by a more than proportionate rise in price level, the real wage rate will fall. This tends to shift consumption function downward.

(iii) Fiscal policy

Changes in fiscal policy, especially taxation policy affects the consumption function. Heavy commodity taxation adversely affects the consumption function. Likewise, when government reduces taxes, consumption of the people increases. At the same time, increased public expenditure on welfare programmes tends to shift the consumption function upward.

(iv) Rate of interest

Substantial changes in the market rate of interest may influence the consumption function indirectly. It is generally believed that higher rate of interest induces people to save more and this results in reducing their propensity to consume. But, this is not true in the case of all the people. Some individuals, who want a certain fixed income in future might consume more and save less when rate of interest goes up, as they can obtain the given fixed income with lesser savings.

(v) Windfall gains and losses

Unexpected changes in the stock market leading to gains or losses tend to shift the consumption function upward or downward. When the prices of shares go up, the shareholders begin to think themselves better off and it causes an upward shift in their consumption function. On the other hand, when the prices of share go down, the shareholders have to suffer sudden losses and tend to reduce their consumption.

(vi) Changes in expectations

Changes in expectations also affect the propensity to consume. When people expect war in the near future and expect prices to go up, they will try to spend more to meet the needs of current period. This shifts the consumption function upward. On the contrary, if the prices are expected to fall in future, people would buy only essential goods. It will lead to a fall in consumption demand and to a downward shift in consumption function.

(vii) Income distribution

Distribution of income and wealth in the society also determines the shape of consumption function. If the national income is more unequally distributed, the lower will be the propensity to consume. This is because propensity to consume of the rich is relatively less as compared to that of poor. If inequalities are reduced, the consumption function will shift upward because with the increase in income of the poor, their consumption expenditure will increase more than the reduction in the expenditure of the rich.

(viii) Stock of wealth

Notes

The stock of wealth owned by households is an important factor that determines the propensity to consume. Pigou attempted to explain the effect of an increased stock of wealth upon consumption and saving. He point out that with addition in real wealth, there is lesser tendency amoung wealth-holders to add further to their amount of wealth. This wealth effect leads to an increase in spending and upward shift in consumption function.

(ix) Consumer credit

The availability of easy credit causes an increase in consumption and shifts consumption function upwards. The easy credit terms permit an increased volume of consumer spending with the purchases occurring earlier than they otherwise would be. On the other hand, tightening of credit produces an opposite effect. That is, it causes a downward shift in the consumption function.

II. The Saving Function

Concept

Saving is defined as that part of disposable income which is not spend on consumption. We know that disposable income is either consumed or saved. Thus,

$Y = C+S$

$S=Y-C$

Where, Y= disposable income

C= consumption

S= saving

This is shown in the following table

Income	Consumption	Saving
0	20	-20
40	50	10
80	80	0
120	110	10
160	140	20

The saving function is the counterpart of the consumption function.

Like consumption, saving is also a function of disposable income. Thus, saving function can be written as S = f (Y). Given a particular consumption function, we can derive the saving function. For instance, given Keynesian linear consumption function

C = a + bY

The saving function can be easily derived as follows Since S = Y-C, we have S = Y – (a + bY)

S = Y- a- bY

S = - a+ Y- bY

In the equation, the term ‗1-b‘ is the value of marginal propensity to save, where ‗b‘ is the value of marginal propensity to consume. In the above table, when income is zero, saving is -20. Savings are negative till income rises to Rs 80. Positive savings take place only after income rises above Rs 80. The saving function will take the form S = - 20+ 0.25Y.

Average Propensity to Save

The saving counterpart to the APC is the average propensity to save or APS. APS is the proportion of the disposable income that is saved. Mathematically, APS is the ratio of saving to income. That is, APS = S/Y. For example, in the previous table, when income is Rs 160, Rs 20 is saved. Thus, APS = S/Y=20/160=0.125. It should be noted that since income can either be consumed or saved (Y = C+S),

the two ratios, that is APC and APS must be add up to one. That is, APC + APS =1 or APS = 1-APC. Following our example, when income is Rs 160, APS = 0.125 and APC = C/Y=140/160 =0.875.

Therefore, we have 0.125+0.875=1

Marginal Propensity to Save

Whereas APS indicates the proportion of income that is saved, marginal propensity to save (MPS) represents how much of the additional disposable income is devoted to saving. Therefore MPS is the change in savings induced by the change in disposable income. As a saving counterpart of MPC, MPS is computed as the ratio of change in saving to change in income. Thus MPS = ΔS/ΔY.

In the above table, when income increases from Rs 120 to Rs 160, the saving increases from Rs 10 to Rs 20. Here the increment in income is 40 and increment in savings is 10. Therefore, MPS = ΔS/ΔY=10/40=0.25. Since additional income is either be consumed or saved, the sum of marginal propensities of consume and save is equal to one. That is, MPC+MPS=1 or MPS = 1-MPC. If MPC is positive but less than one, then it follows that MPS must also be positive but less than one. Furthermore, if the MPC decreases steadily as income rises, then MPS must increase steadily as income rises because these two ratios must add up to one at all levels of income.

Notes

Paradox of Thrift

The classical writers maintained that hard work, restrain from consumption spending and thrift (desire to save more) are great economic virtues. Thriftiness or saving was regarded as an act of prudence on the part of individuals. According to classical prescriptions, minimum spending and highest possible level of savings will always bring definite improvement in the individual‘s or firm‘s financial position. So thriftiness, according to them was key to prosperity. Savings determine investment which plays a crucial role in accelerating the rate of economic growth. They regarded savings not only a private but also a social virtue. An accumulation of savings by all individuals in the community would ensure higher rate of accumulation by the community and progressive growth of the economy would be easily realized. The logic is based on the well known classical assumption that savings and investment remain always balanced with each other

J M Keynes contradicted this widely held belief. In his opinion, savings is a virtue in the case of individuals but no for the society as a whole. The paradox of thrift emerges when all individuals in the society starts saving more than before out of the given level of income. The increased savings causes reduction in consumption spending. This will lower the aggregate demand for goods and services and cumulative decline in national income. As income falls, the investment activity will also go down considerably and hence the accumulation of social savings brings about eventual destruction of capital. Thus, paradox of thrift shows that the efforts to save more may actually deepen economic crisis and cause output and income to fall and unemployment to increase. It is called paradox because in their attempt to save more, the people have caused a decline in their income and consumption with no increase in the savings of the society at all.

6.3.MEC

Investment Function

Meaning

In Keynesian theories investment has been treated as the most volatile and strategic variable in all macroeconomic models. The investment expenditure not only affects the level of aggregate demand but also determines the productive capacity of the economy. Investment plays a crucial role in the determination of short run fluctuations in income or output and determination of the long term growth path of the economy.

In the general sense of the term, investment means using or spending money on acquiring physical or financial asset and skills that yield a return over time. In Keynesian terminology, investment refers to real investment which adds to capital equipments. Real investment includes expenditures on new plant and machinery, construction of public works like roads, dams, buildings etc that creates income and employment. Thus, real investment means the addition to the stock of physical capital.

(i) Gross and Net investment

Gross investment is the flows of expenditure spend on new fixed capital goods or addition to the stock of raw materials and unsold consumer goods etc during an year. But some capital stock wears out every year and is used up for depreciation and obsolescence. Net investment is gross investment minus depreciation and obsolescence charges (or replacement

investment). It is net addition to the existing capital stock of the economy. Thus, net investment is used to denote capital formation.

Notes

(ii) Induced and Autonomous investment

The investment expenditure which is related with the current income, output or interest rates is termed as induced investment. Induced investment is affected by changes in the level of income. When income increases, consumption demand also increases and to meet this investment increases. Keynes regarded rate of interest as a factor determining induced investment. Thus, general form of investment function is given by I = f (Y, i) where ‗Y' is income and ‗i' is the rate of interest. But empirical evidence suggests that induced investment depend more on income than on the rate of interest.

Determinants of Investment

There are three important elements involved that determines the level of aggregate investment expenditure in any time period. They are expected income flow from project, the cost of the project and the market rate of interest. In Keynes's theory of investment he sums up these factors in the concepts of Marginal Efficiency of Capital (MEC) and Marginal Efficiency of Investment (MEI)

Marginal Efficiency of Capital

The marginal Efficiency of Capital (MEC) is the highest rate of return expected from an additional or marginal unit of a capital asset over its cost. In general terms, MEC may be defined as the highest return over the cost expected from producing an additional unit of the most profitable of all categories of the capital asset.

To estimate the MEC, the entrepreneur will take into consideration how much he has to pay for the particular capital asset. The price which he has to pay for the particular capital asset is called the supply price of capital. The second thing which the entrepreneur will consider is that how many yields he expects to obtain from investment from that capital asset. He has to estimate the prospective yield from a capital asset over its life period. Thus the supply price and prospective yield of a capital asset determine the MEC. K K Kurihara points out that MEC is the ratio between the prospective yield of additional capital goods and their supply price. Algebraically, it may be stated as i=y/p where ‗i'is MEC, ‗y' is the prospective yield of capital asset per unit of time and ‗p' is the supply price.

If the annual yield over a series of years is Rs 5000 and the supply price of the capital asset is Rs 40000, then i = y/p = 5000/40000 x 100 =12.5%. An increase in the prospective yield (y) will raise MEC. On the contrary, an increase or decrease in the supply price (p) of the capital asset, given the expected yield, will reduce or raise the MEC (i). Thus, ‗i'is directly related to the prospective yield and inversely related to the supply price of the capital asset.

In a more generalized sense, Keynes has defined MEC as ―the rate of discount which would make the present value of the series of annuities given by the returns expected from the capital asset during its life just equal to its supply price‖.

The entrepreneurs can compute MEC for any capital good once he gets its cost and stream of income expected from it. By comparing the MEC

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with the current market rate of interest he can find out whether the contemplated investment is profitable or unprofitable. In the above illustration, we found MEC to be 10%. If the interest rate is 9%, then the investment would be profitable. But if the interest rate is 11%, it would be considered unprofitable. The MEC will vary when more is invested in a given particular capital asset. In any given period of time, the MEC from every capital asset will decline as more investment is undertaken in it. The main reason for the decline in investment with the increase in investment is that the prospective yield from capital asset falls as more units are installed and used for the production of the good. The second reason for the decline in the MEC is that the supply price of the capital asset may rise due to the increase in demand for it.

6.7Check your progress Questions.

Check your progress-1

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

1.What is Consumption Function?

…………………………………………………………………………

Check your progress-1

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

1.What is MEC?

6.8.Answer to check your progress Questions.

1. A consumption function is a functional statement of relationship between consumption expenditure and its determinants. Although, consumption expenditure of households depends on a number of factors such as income, wealth, rate of interest, expected future income, life style, age, sex etc; income is the primary determinant of consumption.

2. The marginal Efficiency of Capital (MEC) is the highest rate of return expected from an additional or marginal unit of a capital asset over its cost. In general terms, MEC may be defined as the highest return over the cost expected from producing an additional unit of the most profitable of all categories of the capital asset.

6.9.Summary

In this unit you have learnt about the meaning definition and content of consumption on function and MEC .This knowledge would make you understand what in consumption function and it can be functioned at a consumption level. The concept such as consumption function would have

made you to analysis from the consumption and you must have learnt about the meaning and its theory in the consumption context.

Notes

6.10.Key words

MEC, Consumption Function, MPS

6.11. Self Assessment Questions and Exercises.

Short Answer Questions

1.What is APC?

2.What is MPC?

Long answer Questions.

1.Explain the theories of Consumption Function.

2.Describe MEC.

6.12. Further Readings.

Vaish, M.C. (2005), **"Macro Economic Theory",** Vikas Publishing House, New Delhi.

Notes

UNIT-7: INVESTMENT

Structure

7.1.Investment Function

In Keynesian theories investment has been treated as the most volatile and strategic variable in all macroeconomic models. The investment expenditure not only affects the level of aggregate demand but also determines the productive capacity of the economy. Investment plays a crucial role in the determination of short run fluctuations in income or output and determination of the long term growth path of the economy.

7.2.Meaning

In the general sense of the term, investment means using or spending money on acquiring physical or financial asset and skills that yield a return over time. In Keynesian terminology, investment refers to real investment which adds to capital equipments. Real investment includes expenditures on new plant and machinery, construction of public works like roads, dams, buildings etc that creates income and employment. Thus, real investment means the addition to the stock of physical capital.

7.3.Types

(i) Gross and Net investment

Gross investment is the flows of expenditure spend on new fixed capital goods or addition to the stock of raw materials and unsold consumer goods etc during an year. But some capital stock wears out every year and is used up for depreciation and obsolescence. Net investment is gross investment minus depreciation and obsolescence charges (or replacement investment). It is net addition to the existing capital stock of the economy. Thus, net investment is used to denote capital formation.

(ii) Induced and Autonomous investment

Notes

The investment expenditure which is related with the current income, output or interest rates is termed as induced investment. Induced investment is affected by changes in the level of income. When income increases, consumption demand also increases and to meet this investment increases. Keynes regarded rate of interest as a factor determining induced investment. Thus, general form of investment function is given by I = f (Y, i) where ‗Y' is income and ‗i' is the rate of interest. But empirical evidence suggests that induced investment depend more on income than on the rate of interest.

7.4.Determinants of Investment

There are three important elements involved that determines the level of aggregate investment expenditure in any time period. They are expected income flow from project, the cost of the project and the market rate of interest. In Keynes's theory of investment he sums up these factors in the concepts of Marginal Efficiency of Capital (MEC) and Marginal Efficiency of Investment (MEI)

Marginal Efficiency of Capital

The marginal Efficiency of Capital (MEC) is the highest rate of return expected from an additional or marginal unit of a capital asset over its cost. In general terms, MEC may be defined as the highest return over the cost expected from producing an additional unit of the most profitable of all categories of the capital asset.

To estimate the MEC, the entrepreneur will take into consideration how much he has to pay for the particular capital asset. The price which he has to pay for the particular capital asset is called the supply price of capital. The second thing which the entrepreneur will consider is that how many yields he expects to obtain from investment from that capital asset. He has to estimate the prospective yield from a capital asset over its life period. Thus the supply price and prospective yield of a capital asset determine the MEC. K K Kurihara points out that MEC is the ratio between the prospective yield of additional capital goods and their supply price. Algebraically, it may be stated as i=y/p where ‗i'is MEC, ‗y' is the prospective yield of capital asset per unit of time and ‗p' is the supply price.

If the annual yield over a series of years is Rs 5000 and the supply price of the capital asset is Rs 40000, then i = y/p = 5000/40000 x 100 =12.5%. An increase in the prospective yield (y) will raise MEC. On the contrary, an increase or decrease in the supply price (p) of the capital asset, given the expected yield, will reduce or raise the MEC (i). Thus, ‗i'is directly related to the prospective yield and inversely related to the supply price of the capital asset.

In a more generalized sense, Keynes has defined MEC as ―the rate of discount which would make the present value of the series of annuities given by the returns expected from the capital asset during its life just equal to its supply price‖.

The entrepreneurs can compute MEC for any capital good once he gets its cost and stream of income expected from it. By comparing the MEC with the current market rate of interest he can find out whether the contemplated investment is profitable or unprofitable. In the above illustration, we found MEC to be 10%. If the interest rate is 9%, then the investment would be

Notes

profitable. But if the interest rate is 11%, it would be considered unprofitable. The MEC will vary when more is invested in a given particular capital asset. In any given period of time, the MEC from every capital asset will decline as more investment is undertaken in it. The main reason for the decline in investment with the increase in investment is that the prospective yield from capital asset falls as more units are installed and used for the production of the good. The second reason for the decline in the MEC is that the supply price of the capital asset may rise due to the increase in demand for it.

Principle of Effective Demand

In the Keynesian theory of income and employment determination, principle of effective demand occupies a significant place. In the capitalist economy, the level of employment depends upon the level of aggregate effective demand. According to Keynes, effective demand is determined by aggregate supply and aggregate demand. Only that level of demand is effective where aggregate demand and supply are fully matched and entrepreneurs have no tendency either to expand or contract output and employment. We can now analyse the concepts of aggregate supply and aggregate demand and how their interaction determines the equilibrium level of income and employment.

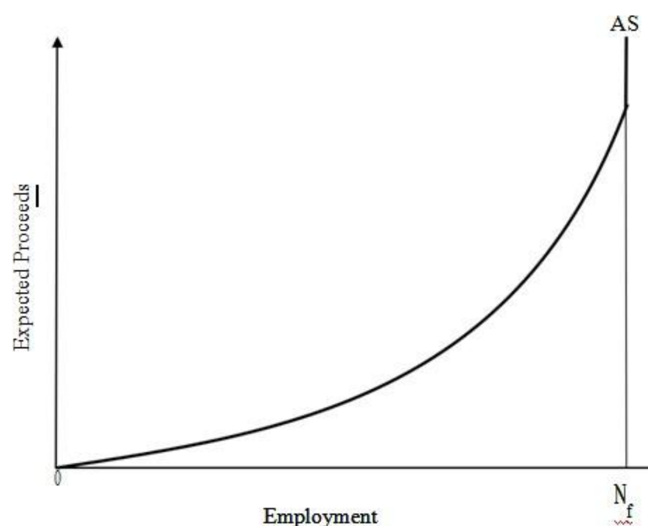
Aggregate Supply Function

In his General Theory, Keynes relates aggregate supply function to varying levels of employment. It is based on the assumption that labour is the only resource and the only cost which must be covered by the sale proceeds. At any level of employment of labour, aggregate supply price is the total amount of money which all the entrepreneurs in the economy taken together, must expect to receive from the sale of output produced by the given number of labours employed, if it is just worth employing them. Aggregate supply price, at given level of employment, according to Keynes, is the expectation of proceeds which will just make it worthwhile for the entrepreneurs to employ that number of workers. It is the minimum proceeds which the entrepreneurs expect to recover from the sale of output. We can represent aggregate supply faction as a schedule of various aggregate supply prices at different levels of employment. That is, each level of employment in the economy is related to a particular aggregate supply price and there are different aggregate supply prices for different levels of employment as shown in the following table.

Levels of employment (in lakhs of workers)	Aggregate Supply Price (in crores of Rs)
10	200
20	220
30	240
40	260
50	280

50	300

The above table represents varying levels of aggregate supply prices at different levels of employment. It reveals that the aggregate supply price rises with the increase in level of employment. If the entrepreneurs are to provide employment to 20 lakh workers, they must receive Rs 220 crores from the sale of output produced by them. If the level of employment is 40 lakh the aggregate supply price is 260 crores which is the minimum proceeds expected to receive to sustain such level of employment. But when the economy reaches the level of full employment (50 lakh) aggregate supply price continues to increase but there is no further increase in employment. According to Keynes, the aggregate supply function is an increasing function of the level of employment. But when the economy reaches full employment, aggregate supply function becomes perfectly inelastic. Aggregate supply function is linear. But if wage rate also increases long with the expansion in employment, the aggregate supply function follows a nonlinear path as shown below.



The curve of aggregate supply function starts from the point of origin and slopes upwards to the right because as the necessary expected proceeds increase, the level of employment also increases. But when the economy reaches full employment limit, as indicated by N_f, the aggregate supply curve becomes vertical. Even with the increase in aggregate supply price it is not possible to provide more employment as the economy has attained the level of full employment.

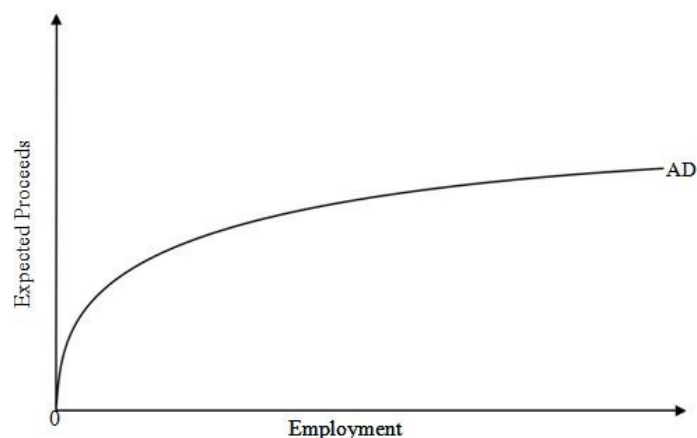
Aggregate Demand Function

The major analytical tool employed by Keynes in the determination of income and employment is aggregate demand function. According to Keynes, aggregate demand function means the amount of money or proceeds that all the entrepreneurs in the economy taken together expect to receive from the sale of output produced by the given number of workers employed. In other words, aggregate demand price, represents the amount of

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expenditure actually expected by the entrepreneurs when a given number of workers are employed to produce goods and services. The aggregate demand schedule does not represent any particular or actual level of demand; it is simply the possible level of demand for different categories of goods and services. Thus, aggregate demand is an *ex-ante* concept.

In a two sector economic model consisting of households and business sector, the level of aggregate demand is determined by aggregating the expected expenditures on the consumer goods and services and in the investment goods. Thus, aggregate demand is determined by the consumption demand and investment demand. The aggregate demand can be expressed as D = C + I. As said above, consumption demand depends on disposable income on the one hand, and propensity to consume on the other. According to Keynes, investment is determined by marginal efficiency of capital (MEC) and rate of interest. While rate of interest is more or less sticky, it is the changes in MEC that cause frequent changes in inducement to invest. According to Keynes, the aggregate demand function is an increasing function of the level of employment. Thus we can construct aggregate demand curve showing different aggregate demand prices at different levels of employment. Aggregate demand also rises from left to the right. This is because as the level of employment increases, aggregate demand price also rises, as shown below.

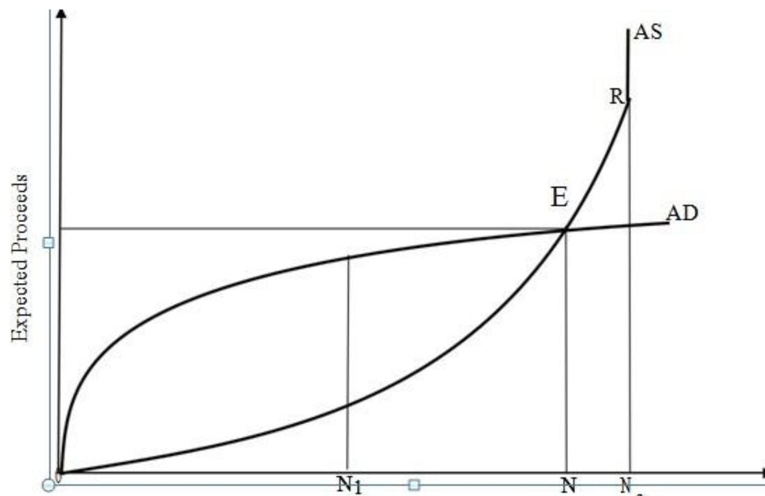


Effective Demand and Determination of Employment

As said above, aggregate supply curve shows the receipts which must be received by the entrepreneurs so as to provide employment to given number of laborers whereas aggregate demand curve shows proceeds which entrepreneurs actually expects to receive at different levels of employment. These aggregate demand and aggregate supply curves determine the level of employment in the economy. The equilibrium level of employment is determined at the point where demand price aggregate equals the aggregate supply price. In other words, it is the point where what the entrepreneurs
‗expects to receive‘equals what they ‗must receive‘and their profits are maximized. This point is called the effective demand. Effective demand is that aggregate demand price which becomes ‗effective‘because it

is equal to aggregate supply price and thus represents short run equilibrium.

Notes



Employment

Higher than aggregate supply price, the prospects of getting additional profits are greater when more workers are provided employment. The expected proceeds (revenue) rise more than proceeds necessary (cost). This process will continue till the aggregate demand price equals aggregate supply price and the point of effective demand is reached.

It is not necessary that the equilibrium level of employment is always at full employment. Equality between aggregate demand and aggregate supply does not necessarily indicate the full employment level. The economy can be in equilibrium at less than full employment or underemployment equilibrium can exist. The classical economists denied that there would be equilibrium at less than full employment because they believed that supply creates its own demand and therefore deficiency of aggregate demand would not be experienced. Keynes demolished the classical thesis of full employment and point out that deficiency of aggregate demand can cause underemployment equilibrium. The following figure illustrates the principle of effective demand and the determination of equilibrium level of employment.

AD is the aggregate demand function and AS is the aggregate supply function. Aggregate demand curve and aggregate supply curve intersects at point E. this is the effective demand where $0N_2$ workers are employed. At less than $0N_2$ level of employment, say at $0N_1$, aggregate demand curve lies above aggregate supply curve showing that it is profitable to expand the amount of employment. However, it would not be profitable for the entrepreneurs to increase employment below $0N_2$, as AD lies below AS and they incur losses. Thus, E, the point of effective demand determines actual level of employment in the economy.

It can be noticed that the equilibrium at E represents underemployment or less than full employment level. At equilibrium level of employment $0N_2$, the N_2N_f persons remain unemployed. It is important to note that N_2N_f persons are involuntarily unemployed. They are willing to

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work at the existing wage rates but are unable to find jobs. This unemployment is due to deficiency of aggregate demand. It follows that, to raise the economy to the level of full employment, requires the raising the point of effective demand by increasing the aggregate demand. The unemployment will be removed and full employment will be reached if through increase in investment demand or increase in consumption demand or both, aggregate demand curve shifts upwards so that it intersects aggregate supply curve at point R. With the intersection of aggregate demand and aggregate supply at point R, equilibrium will be stabled at full employment level $0N_f$.

7.5.MEI

Economists call the expected rate of return on an addition to capital investment as the marginal efficiency of investment (MEI).
More precisely, it is the expected rate of return over cost of an additional unit of a capital good. Thus, there can be MEI or expected rate of return of 25 percent for one type of investment, 15 percent for another, and so on.

As pointed out by terner, what Keynes had called MEC was in fact the MEI.

In order to gain a better understanding of the MEI we study its graph given in Figure.

1. Renovating its existing plant

2. Purchasing new machines

3. Acquiring additional power facilities

4. Installing a computer system

Each project competes for a firm’s limited funds. However, some projects are expected to be more profitable—that is, to have a higher rate of return (or MEI) than others. In view of this, which projects should management select? Or, in other words, how much investment expenditure should management undertake?

The first step in answering this question is to imagine that the management of a firm rank alternative investment projects in decreasing order of their MEIs.

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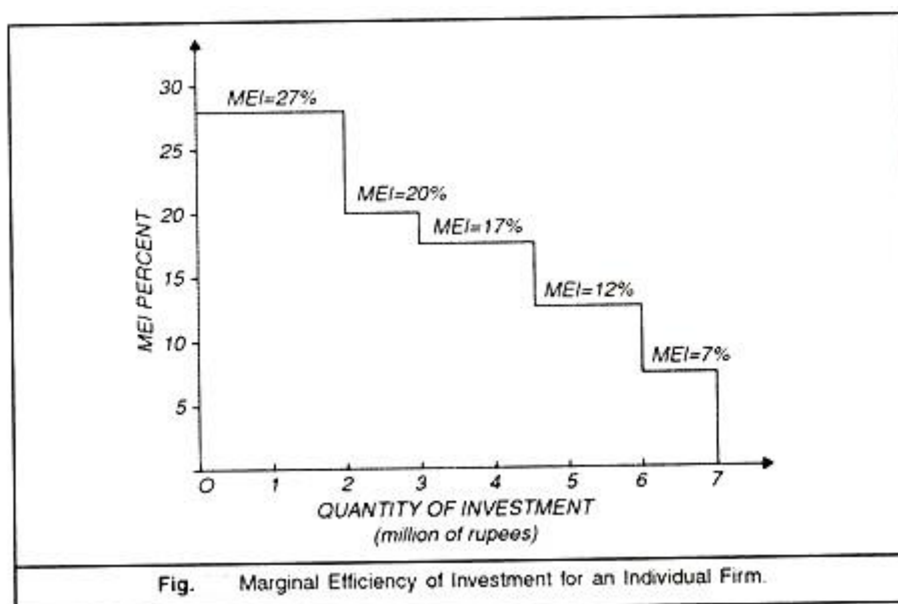


Fig. Marginal Efficiency of Investment for an Individual Firm.

Figure, each project's cost and the corresponding MEIs are shown. The most attractive investment open to the firm is the renovation of its plant at a cost of Rs. 2 million. For this, the firm anticipates a rate of return, or MEI, of 27 percent, which is read from the vertical axis, the next most profitable investment is the addition of a new wing to its factory at a cost of Rs. 1 million, for which the MEI is 20 percent. Each remaining investment project is interpreted similarly.

If we assume that the risks of loss associated with these investments are the same, the descending order of MEI suggests two things:

1. Fewer investment opportunities are available to a firm at higher rates of return than at lower ones. For example, it is harder to find investment yielding 25 percent than to find investments yielding 10 percent.

2. A firm will tend to choose those investment projects which have the highest MEIs. Therefore, a project with a higher anticipated rate of return over cost is likely to be selected over a project with a lower one.

Figure shows the solid stepped line as an individual firm's MEI curve. It shows the amount of investment the firm will make at various interest rates or cost of funds at any given time. The MEI curve is then the firm's demand curve for investment. These are many such stepped curves at any given time, one for each firm in the economy.

Figure shows the MEI curve for all firms. It is a smooth line obtained by summing individual MEI curves. It shows the total amount of private sector investment which will be made at various interest rates. The MEI curve in this chart is the economy's aggregate demand curve for private-sector investment.

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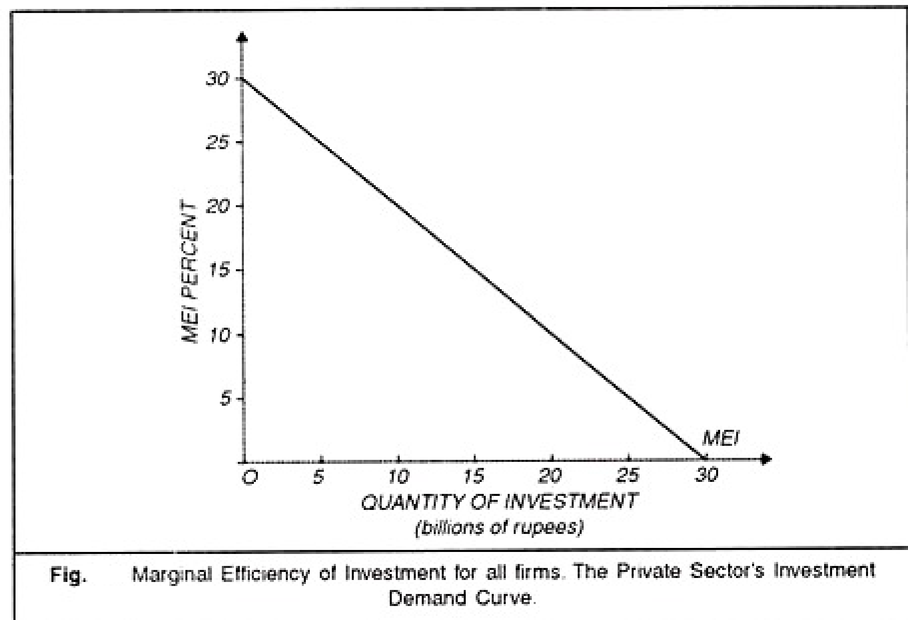


Fig. Marginal Efficiency of Investment for all firms. The Private Sector's Investment Demand Curve.

Criticism of the Marginal Efficiency of Capital Concept:

Keynes's concept of Marginal Efficiency of capital has been criticized on two counts.

Firstly, it has been pointed out by A.P. Lerner that what Keynes called MEC is really efficiency of Investment and not capital. Keynes' MEC was a vague and even ambiguous concept.

Secondly, Keynes failed to realise that interest rates were as much governed by expectation, as was the MEC otherwise he would have considered the rate of interest to be as much a dynamic clement as the MEC. In fact, Keynes had recognised only partly the role of expectations in his speculative demand for money.

7.6Check your progress Questions.

Check your progress-1

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

1.What is Gross investment?

Check your progress-2

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

1.What is Net investment?

7.7Answer to check your progress Questions.

Notes

1. Gross investment is the flows of expenditure spend on new fixed capital goods or addition to the stock of raw materials and unsold consumer goods etc during an year. But some capital stock wears out every year and is used up for depreciation and obsolescence.

2. Net investment is gross investment minus depreciation and obsolescence charges (or replacement investment). It is net addition to the existing capital stock of the economy. Thus, net investment is used to denote capital formation.

7.8.Summary

In this unit you have learnt about the meaning, types determination of investment function. This knowledge would make you an user t understand what is investment function and how it can be worked at a economy. The concept such as types and determination would have made you to analysis these activities from the investment function and you must have learnt about the meaning of MEI and its functions in the investment level.

7.9Key words

Investment Function, Induced investment

7.10. Self Assessment Questions and Exercises.

Short Answer Questions

1.What is Effective demand?

2.What means Aggregate demand?

Long answer Questions.

1.Explain the determinants of Investment?

2.Explain MEI.

7.12. Further Readings.

Shapiro, Edward (2008), **"Macro Economic Analysis",** Galyotia Publications, New Delhi.

Notes

UNIT-8: MULTIPLIER

Structure

8.1.Multiplier

In economics, a multiplier broadly refers to an economic factor that, when increased or changed, causes increases or changes in many other related economic variables. In terms of gross domestic product, the multiplier effect causes gains in total output to be greater than the change in spending that caused it.

8.2.Meaning

The term multiplier is usually used in reference to the relationship between government spending and total national income. Multipliers are also used in explaining fractional reserve banking, known as the deposit multiplier.

8.3. Characteristics

Explaining Multipliers

A multiplier is simply a factor that amplifies or increase the base value of something else. A multiplier of 2x, for instance, would double the base figure. A multiplier of 0.5x, on the other hand, would actually reduce the base figure by half. Many different multipliers exist in finance and economics.

The Fiscal Multiplier

The fiscal multiplier is the ratio of a country's additional national income to the initial boost in spending or reduction in taxes that led to that extra income. For example, say that a national government enacts a $1 billion fiscal stimulus and that its consumers' marginal propensity to consume (MPC) is 0.75. Consumers who receive the initial $1 billion will save $250 million and spend $750 million, effectively initiating another,

smaller round of stimulus. The recipients of that $750 million will spend $562.5 million, and so on.

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The Investment Multiplier

An investment multiplier similarly refers to the concept that any increase in public or private investment has a more than proportionate positive impact on aggregate income and the general economy. The multiplier attempts to quantify the additional effects of a policy beyond those immediately measurable. The larger an investment's multiplier, the more efficient it is at creating and distributing wealth throughout an economy.

The Earnings Multiplier

The earnings multiplier frames a company's current stock price in terms of the company's earnings per share (EPS) of stock. It presents the stock's market value as a function of the company's earnings and is computed as (price per share/earnings per share).

This is also known as the price-to-earnings (P/E) ratio. It can be used as a simplified valuation tool for comparing relative costliness of the stocks of similar companies, and for judging current stock prices against their historical prices on an earnings relative basis.

The Equity Multiplier

The equity multiplier is a commonly used financial ratio calculated by dividing a company's total asset value by total net equity. It is a measure of financial leverage. Companies finance their operations with equity or debt, so a higher equity multiplier indicates that a larger portion of asset financing is attributed to debt. The equity multiplier is thus a variation of the debt ratio, in which the definition of debt financing includes all liabilities.

8.4.Static and Dynamic multiplier

We have no means to know how and in what stages or time intervals the final increase in the total income is attained. Keynesian multiplier shows the process of income expansion from one point of equilibrium and that too under static assumptions. No idea is given of the actual sequence of events and no time- lags are involved.

The whole process of income propagation is automatic, unhampered by time or other factors. For example, it may be remembered that multiplier does not work only when changes in the expenditures occur as a result of private and public investment, but also due to increases in consumption expenditures (though Keynes assumed them to be stable in the short-run).

Should the investment expenditures remain fixed over time a decline in savings or a reduction in taxes may lead to increased consumption expenditures in the long-run giving rise to multiplier effects. Post-Keynesian writers have pointed out that the magnitude of the multiplier is bound to be affected by time lags, i.e., by the fact that the particular doses of investments will take time to exert their full influence in raising income.

Meanwhile, it is just possible that fresh investments may have taken place and may themselves cause multiplier effects. If there are time lags, the final equilibrium position will take longer to reach, the income rises more slowly than it would do in the absence of lag. Keynes seems to have thought that the effects of such lags would be unimportant. But the real multiplier, should take into consideration the dynamic forces working in the economy.

According to the critics, it is better to replace the Keynesian static multiplier by the dynamic multiplier, which takes account of changing events. Despite these observations, it is useful to remember that Keynes discussed, though briefly, three different concepts of the multiplier: the logical theory of the multiplier assuming no time lag, the period analysis concept of multiplier based on the assumption of time lags and 'comparative statics' timeless concept of multiplier in which the transition process or the path is skipped over completely.

The discussion still continues. On the one hand, there were and still are, some points which require clarification, on the other hand, the highly simplified models of Johannsen, Kahn and Keynes require modifications and extension in certain directions. We should like to take up two of the many directions with which current research is concerned.

These are as follows:

The first direction relates to the time it takes for the multiplier process to work itself out. We speak of the multiplier effects in the first, second, third etc. period (specially in case of dynamic multiplier) and note that after a small number of periods the size of the effects is very near the final equilibrium value. Thus, we still have to know how long these periods are, whether they last a day, a week, a month or a year.

Johannsen felt that the interval between cause and effect was not very long; rather cause and effect proceed together hand in hand. It is possible and even probable that his conjecture is correct. Yet to get a correct answer, lot of empirical work and research is required. Attempts to answer these questions were made by F. Machlup' and more recently by G. Ackley.

Thus, the pure theory of multiplier shows the definitional relation between the 'propensity to consume' and the 'multiplier'. Many problems which frequently arise under the heading 'multiplier' lie outside the pure theory of the multiplier. Apart from the problems mentioned above, other problems relate to the determination of the amount of net investment associated with a given amount of spending under varying circumstances and the determination of the numerical value of the multiplier.

The MPC of the individual to which Keynes fundamental psychological law refers, is only one of many factors which are casually important for the determination of the MPS (multiplier) of society as a whole. Hence, we need not exaggerate the stability of the multiplier over time.

8.5.Check your progress Questions.

Check your progress-1

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

1.What is Multiplier?

Check your progress-2

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

1.What is fiscal multiplier?

8.6.Answer to check your progress Questions.

1. A multiplier is simply a factor that amplifies or increase the base value of something else. A multiplier of 2x, for instance, would double the base figure. A multiplier of 0.5x, on the other hand, would actually reduce the base figure by half. Many different multipliers exist in finance and economics.

2. The fiscal multiplier is the ratio of a country's additional national income to the initial boost in spending or reduction in taxes that led to that extra income.

8.7..Summary

In this unit, you have learnt about the meaning, concept, characteristics is of multiplier. This knowledge would make you what a and it can be would at a business. The concept such as static and dynamic multiplier would have made you to distinguish these activities from the multiplier activities and you must have learnt about the meanings and its functions in the multiplies context.

8.8.Key words

Multiplier, Investment Multiplier, Equity Multiplier, Earnings Multiplier

8.9. Self Assessment Questions and Exercises.

Short Answer Questions

1.What is Equity Multiplier?

2.What is Earnings Multiplier?

Long answer Questions.

1.Explain the charecteristics of Multiplier?

2.Describe static and dynamc multiplier?

8.10.Further Readings.

Notes

Seth, M.L. (1999), **“Macro Economics”,** Lakshmi Narayan Agarwal Publishers, New Delhi.

UNIT-9: ACCELERATOR

Notes

Structure:

9.1. Accelerator: Meaning

The multiplier and the accelerator are not rivals: they are parallel concepts. While multiplier shows the effect of changes in investment on changes in income (and employment), the accelerator shows the effect of a change in consumption on private investment.

The Principle of Acceleration states that if the demand for consumption goods rises, there will be an increase in the demand for the equipment, say machines, which produce these goods. But the demand for the machines will increase at a faster rate than the increase in demand for the product.

The accelerator, therefore, makes the level of investment a function of the rate of change in consumption and not of the level of consumption. In other words, the accelerator measures the changes in investment goods industries as a result of long-term changes in demand in consumption goods industries.

The idea underlying the accelerator is of a functional relationship between the demand for consumption goods and the demand for machines which make them. The acceleration coefficient is the ratio between induced investments to a given net change in consumption expenditures.

$$v = \Delta // \Delta C$$

Symbolically where v stands for acceleration coefficient; ΔI denotes the net changes in investment outlays; and ΔC denotes the net change in consumption outlays. Suppose an additional expenditure of Rs. 10 crores on consumption goods leads to an added investment of Rs. 20 crores in

investment goods industries, then the accelerator is 2. The actual value of the accelerator can be one or even less than that.

Notes

9.2. Characteristics

In actual world, however, increased expenditures on consumption goods always lead to increased expenditures on capital goods. Hence acceleration coefficient is usually greater than zero. Where a good deal of capital equipment is needed per unit of output, the acceleration coefficient is very much more than unity.

In exceptional cases, the accelerator can be zero also. Sometimes it so happens that production of increased consumer goods (as a result of a rise in their demand) does not lead to an increase in the demand for capital equipment producing these goods.

Accelerator depends primarily upon two factors:
(i) The capital-output ratio, and

(ii) The durability of the capital equipment.

A numerical example will clarify the dependence of acceleration value on the durability of the machine, capital-output ratio being given.

9.3. Induced Investment and Accelerator

The acceleration principle describes the effect quite opposite to that of multiplier. According to this, when income or consumption increases, investment will increase by a multiple amount. When income and therefore consumption of the people increases, the greater amount of the commodities will have to be produced.

This will require more capital to produce them if the already given stock of capital is fully used. Since in this case, investment is induced by changes in income or consumption, this is known as induced investment. The accelerator is the numerical value of the relation between the increase in investment resulting from an increase in income.

The net induced investment will be positive if national income increases and induced investment may fall to zero if the national income or output remains constant. To produce a given amount of output, it requires a certain amount of capital. If Y_t output is required to be produced and v is capital-output ratio, the required amount of capital to produce Y_t output will be given by the following equation:

$$K_t = vY_t \quad \ldots(i)$$

where K, stands for the stock of capital,

Y_t for the level of output or income, and v for capital-output ratio.

This capital-output ratio v is equal to K/Y and in the theory of accelerator this capital-output ratio is assumed to be constant. Therefore, under the assumption of constant capital-output ratio, changes in output are made possible by changes in the stock of capital. Thus, when income is

Y_t then required stock of capital $K_t = vY_t$. When output or income is equal to Y_{t-1}, then required stock of capital will be $K_{t-1} = vY_{t-1}$.

It is clear from above that when income increases from Y_{t-1} in period t – 1 to Y_t in period, t, then the stock of capital will increase K_{t-1} from to K_t. As seen above, K_{t-1} is equal to vY_{t-1} and K_t is equal to vY_t.

Hence, the increase in the stock of capital in period t is given by the following equation:

$$K_t - K_{t-1} = vY_t - vY_{t-1}$$

$$K_t - K_{t-1} = v\,(Y_t - Y_{t-1}) \quad \ldots(ii)$$

Since increase in the stock of capital in a year ($K_t - K_{t-1}$) represents investment in that year, the above equation (ii) can be written as below:

$$I_1 = V\,(y_t - y_{t-1}) \quad \ldots(iii)$$

Equation (iii) reveals that as a result of increase in income in any year t from a previous year t- 1, increase in investment will be v times more than the increase in income. Hence, it is v, i.e., capital-output ratio, which represents the magnitude of the accelerator. If the capital-output ratio is equal to 3, then as a result of a certain increase in income, investment will increase three times more, i.e., accelerator here will be equal to 3.

It thus follows that investment is a function of change in income. If income or output increases over time, that is, when Y_t is greater than F_{t-1} then investment will be positive. If income declines, that is, Y_t is less than Y_{t-1} then disinvestment will take place. And if the income remains constant, that is, $Y_t = Y_{t-1}$ the investment will be equal to zero.

9.5.Check your progress Questions.

Check your progress-1

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

Check your progress-2

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

1.What is Induced Investment?

…………………………………………………………………………………
…………………………………………………………………………………

9.6.Answer to check your progress Questions.

1. The Principle of Acceleration states that if the demand for consumption goods rises, there will be an increase in the demand for the equipment, say

Notes

machines, which produce these goods. But the demand for the machines will increase at a faster rate than the increase in demand for the product.

2. The net induced investment will be positive if national income increases and induced investment may fall to zero if the national income or output remains constant. To produce a given amount of output, it requires a certain amount of capital

9.7..Summary

In this unit you have learnt about the meaning definition characteristics of accelerator. This knowledge would make you understand what is accelerator and it can be worked at a Economic. The concept such as include investment and accelerator would m have made you to distinguish these activities from the accelerator principles and you might have learnt about the meaning and its working in the economic.

9.8.Key words

Accelerator, Induced Investment

9.9. Self Assessment Questions and Exercises.

Short Answer Questions

1.What is Accelerator?

2.What is induced investment?

Long answer Questions.

1.Explain the characteristics of accelerator?

2.Describe the induced investment?

9.10.Further Readings.

Shapiro, Edward (2008), **"Macro Economic Analysis",** Galyotia Publications, New Delhi.

UNIT-10: EMPLOYMENT MULTIPLIER

Notes

Structure:

10.1. Employment Multiplier: Meaning

Employment multiplier is associated with the name of Prof. R.F. Kahn. The idea of multiplier had its origin in 1931 when Prof. Kahn was discussing the favourable effects of public investment on aggregate employment.

Prof. Kahn was of the view that an initial increase in employment leads to a very large increase in the total employment. All discussions on public works prove that besides the 'original' or 'primary' employment in the public works, there will be 'secondary' employment, resulting from public works. Secondary employment is that which occurs in consumption goods industries as a result of the primary employment in public works.

Kahn's employment multiplier is a ratio of a change in total employment to the primary employment. Primary employment stands for the employment of the workers in public works like drainage, digging, roads, buildings, etc. As the workers are employed, they get income which increases aggregate demand and it leads to expansion of output in consumer goods industries, which in turn, leads to more employment, more demand for goods and machines and so on.

The prosperity and development of the industrial sector leads an expansion of tertiary activities like banking, insurance, trade, transport etc. Suppose 2 million persons are employed in the construction of roads, they

Notes

demand more consumer goods, thereby raising the demand in consumer goods industries; this will lead to additional employment in such industries.

Additional income will flow to the additional workers employed in consumer goods industries who again demand more goods and services thereby giving a fillip to secondary employment of six million workers and raising the total employment to 8 million workers giving us the employment multiplier equal to 4, being the ratio of the total increase in employment to the initial increase in employment (i.e., $^8/_2 = 4$).

Kahn's employment multiplier is shown by the letter K' to distinguish it from Keynes' investment multiplier expressed by K. If N_1 is the primary increase in employment and N_2 the total increase in employment, then employment multiplier (K) is equal to N_2/N_1 or K'- N_2N_1 or $KN_1 = N_2$.

The expression $\Delta N_2 = K' . \Delta N_1$ is similar to the expression $\Delta Y = K \Delta I$. According to Prof. Hansen, we do no great violence to the facts if we take employment multiplier (K) equal to investment multiplier (K), though we have no reason to presume them to be equal to each other. For the sake of simplicity and understanding, we take them to be the same for all practical purposes, at least in the short period, because when the investment increases, employment also increases though not in the same ratio.

10.2.The Interaction Principle

The principle of acceleration has attained more importance in cyclical theory by its alliance with the multiplier principle.

The interaction of the accelerator with the multiplier is capable, under certain circumstances, of generating continuous cyclical fluctuations.

Economists like P.A. Samuelson, J.R. Hicks, R.F. Harrod and A. Hansen have made fairly successful attempts to integrate the two parallel concepts and have introduced certain remarkable improvements. Neither the multiplier nor the accelerator taken alone can act. In fact, the two tools combine in a series of endless possibilities, depending on the values of the accelerator and the magnitude of the multiplier. In other words, the relationship can be expressed as follows:

$\Delta I_a \rightarrow$ (multiplier) $\rightarrow \Delta Y \rightarrow$ (accelerator) $\rightarrow \Delta I_b \rightarrow (K) \rightarrow \Delta Y \rightarrow$ ...

where an initial increase in autonomous investment (I_a) works through the multiplier to cause an increase in income (ΔY), and this works through the accelerator to cause a greater change in induced investment (l_b), which, in turn, increases income still more and so the action and the interaction continue. The process is super-cumulative because one initial increase (or decrease) will set off a snowball effect where income and investment interact to magnify the impact at each successive level.

It is, therefore, quite interesting and useful to analyze the combined effects of multiplier and accelerator on national income propagation. In order to measure the total effects of initial expenditure on national income, we must combine the acceleration and multiplier principles, popularly called the 'leverage effects'. The combined effects of autonomous and induced investment are expressed in what Hansen calls the 'Super-Multiplier'.

Assumptions:
(i) Marginal Propensity to consume = ½=0.5

(ii) Acceleration coefficient= 2

In the table given above, we can easily see the process of income propagation via the multiplier and acceleration principles, we assume (i) MPC = ½ (ii) Acceleration coefficient = 2. In the first period there is an initial outlay of Rs. 10 crore, which does not lead to any induced investment. Hence, the total rise in national income in the first period is Rs. 10 crore (being equal to initial outlay of Rs. 10 crore).

Since the MPC = ½, therefore, the induced consumption in the second period is Rs. 5 crore (shown in the column 3) and acceleration coefficient being 2, the induced investment in the second period is Rs. 10 crore, (shown in column 4) and the total leverage effects (total increase in national income) is Rs. 25 crore (shown in column 5). Similarly, in the third period, we get induced consumption of Rs. 12.50 crore and induced net investment of Rs. 15 crore being twice the difference between 12.50 crore and 5 crore (shown in column 3).

Thus, total income in the fourth period has reached the peak level of Rs. 41.25 crore, as a result of the combined multiplier and acceleration interaction (called Super-Multiplier). Then, in the fifth period, the total income starts falling and falls to rock bottom level of – 1.15 crore in 8th period and then again starts rising from 15.52 crore to 32.12 crore and goes upto 42.66 crore in the 11th period, thereby completing a cycle. The result is quite a moderate type recurring cycle which repeats itself indefinitely.

This shows that mpc of less than unity gives an answer to the question: Why does the cumulative process come to an end before a complete collapse or before full employment? Hansen says that the rise in income progressively slowed down on account of a large part if the increase in income in each successive period is not spent on consumption. This results in a decline in the volume of induced investment and when such a decline exceeds the increase in induced consumption, a decline in income sets in.

“Thus, it is the marginal propensity to save which calls a halt to the expansion process even when the expansion is intensified by the process of acceleration on top of the multiplier process.” However, we have assumed constant values of multiplier and acceleration coefficients but in a dynamic economy they vary cyclically. Thus, when we study the results of leverage effects or the interaction of multiplier and acceleration coefficients, we find that the level of income will be subject to various types of fluctuations depending on the values of acceleration and the multiplier.

In the Fig. 42.1, we measure time periods on the horizontal axis and the increase in income on the vertical axis. The curve a to b and b to c shows the ordinary process of income propagation (total leverage effects) as a result of multiplier and accelerator interaction during 5 periods.

Notes

The income rises to its peak up to Rs. 41.25 crore (from a to b). This is because the rate of increase of induced consumption goes on g 40 – increasing from period 1 to 4, acceleration effects work g in conjunction with the multiplier to push up the level of income. However, income falls in the period 5 from b to c since the rate of increase in induced consumption 2 falls. But income and investment will not keep on going higher and higher indefinitely because two forces work to cause an eventual leveling off.

Firstly, the mps and other leakages like taxes reduce the rate of growth of consumption at each stage until the consumption finally ceases to increase at all. Secondly, the initial increase in an autonomous investment soon exhausts itself, because as the capital stock grows during expansion, the MEC is likely to fall till investment is no longer profitable. Thus, while the interaction of the multiplier and accelerators magnifies economic expansion, it also acts to set its own limits through the eventual reduction of consumption and autonomous investment.

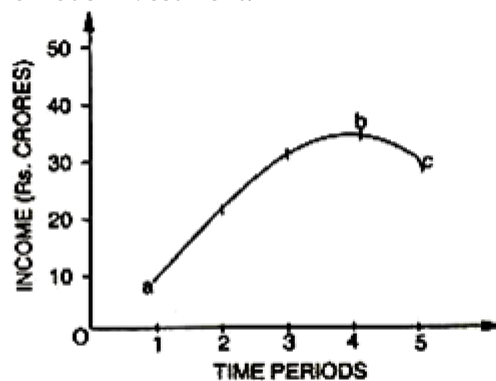


Fig. 42.1

10.3.Basics of Income and Employment Multiplier

The economic base model is commonly used for estimating the short-term impacts of a particular project on employment. It has also been used occasionally for projections, although there is a great deal of controversy among economists over the assumptions it makes and the methods it uses to determine the components of the model. Also, it has one limitation which is particularly important for local governments to understand: it is most appropriate for estimating the change in employment in an economic region. Using this method, it is much more difficult to estimate what share of the indirect and induced employment a particular city or county will receive. This is not so great a problern in single-county economic regions, but in the Los Angeles or San Francisco areas, employees of a new project may commute substantial distances, thus spreading the effects of employment over a number of cities and counties.

The economic base model divides employment into two major categories: 1) *export or basic industries* which produce and sell goods or services to markets outside the region and therefore bring in new income to the area; and, 2) *Local-Market Serving*, also called *service or residentiary industries* which produce and sell goods or services to the local market and therefore simply circulate existing income in the area. The export industries in a region make up the economic base. It needs to be noted that *tourism* may

also be part of the economic base of a region although in the following basic industries are identified with export industries.

Notes

Employment in the export sector creates a multiplier effect by providing additional employment from the new income it brings in. The service industries develop largely to serve the local needs of the existing population. Thus, the economic base model can be used for projecting employment if it is assumed that a ratio of service to export employment can be measured and that the ratio will remain sufficiently stable so that forecasts of export employment can be used to determine future total employment. The total number of jobs resulting from one export job is the employment multiplier.

In order to explain the employment multiplier, it is necessary to understand the concept of the income multiplier. The income multiplier measures the change in local income that results from a change in local production stimulated by outside, independent demand:

k_y = [Δlocal income (direct, indirect, and induced)]/ [Δindependent (direct) demand]
where, Δ stands for "change in" a quantity

The use of k as a symbol for the income multiplier may be puzzling to noneconomists. The k probably stands for the British economist John Maynard Keynes; y is often used to symbolize income because i represents other variables.

The increase in demand for local production for each increase in local production, (m), can be represented as the product of four factors:

= (Δlocal incomes)/(Δlocal production)x (Δspending of residents)/(Δlocal income)x (Δlocal spending of residents)/(Δspending of residents)x (Δdemand for local production)/(Δlocal spending of residents)

10.4. Keynesian Revolution and its Application to Less Developed Countries

Keynesian theory was mainly concerned with cyclical unemployment which arose in industrialised capitalist countries especially in times of depression. During the period of Greet Depression (1929-33), the developed capitalist countries faced a drastic fall in GNP resulting in severe unemployment.

J.M. Keynes explained that it was fall in aggregate effective demand for goods and services that was responsible for depression and huge unemployment that arose during the period of depression. Keynes put forward a theory of income and employment which explained the determination of income and employment through aggregate demand and aggregate supply.

Notes

In the early fifties although few economists caused doubts on the validity of the Keynesian theory as applied to the advanced developed countries of the West, a number of eminent Indian economists cast doubts on the applicability of Keynesian economics to the developing countries like India.

Prominent among those who held that Keynesian theory was not relevant in the context of the underdeveloped economies, mention may be made of Dr. V.K.R.V. Rao and Dr. A.K. Dass Gupta who pointed out that the nature of the economic problems of the developing countries was quite different from the problems that arose during the Great Depression in the developed countries of the West and therefore the Keynesian theory of income and employment and the policy recommendations were not very helpful in the context of the then under-developed countries.

In what follows we first explain this traditional view regarding the inapplicability and irrelevance of Keynesian economics to the developing countries like India. However, in recent years, in my view, after five decades of economic growth and development in the developing economies like the Indian many principles and postulates of Keynesian theory have become quite relevant to the problems of the present day developing countries. We discuss below these traditional and modern views about the relevance of Keynesian economics to the developing countries.

The Demand-Deficiency Problem:

The principle of deficiency of effective demand is perhaps the most important proposition put forward by J.M. Keynes. It was pointed out that Keynes explained that drastic decline in GNP and increase in involuntary unemployment that occurred during the period of depression was due to deficiency of aggregate demand caused by decrease in investment demand, but the problems of lack of economic growth, poverty and unemployment were due to entirely different reasons. Poverty and unemployment in developing countries, it was pointed out, was caused by more fundamental and structural factors such as lack of capital stock relative to labour force of these economies.

Thus, Dr. A.K. Das Gupta wrote, “Indeed whatever be the generality of the General Theory may be in the sense in which the term ‘general’ was used by Keynes the applicability of the propositions of the General theory to conditions of an underdeveloped economy is at best limited”.

Therefore, it was explained that Keynesian policy prescriptions to raise aggregate demand such as increase in Government expenditure by deficit financing cannot be adopted to accelerate the growth of income and employment.

Recent Demand Deficiency Problem in the Indian Economy:

It may be noted that since mid 1996 till date (April 2003), that is, in the last six years the Indian economy has again witnessed a slowdown in industrial growth. There is a general consensus that this slowdown in industrial growth has been mainly caused by decline in effective demand.

The demand from all important sources namely, agriculture, investment and exports have decreased. Thus, authors of Economic Survey (1998-99) write, The slowdown in industrial growth may be attributed primarily to slacking in aggregate demand.

Among the factors causing this slackening of aggregate demand three factors have been mentioned:

(1) Fall in demand for Indian exports,

(2) Decline in consumption demand by the rural people due to negative growth in agriculture, for example in 1997-98,1999-2000,2000-01, and 2002-03 and

(3) Slow growth of investment, both by the public and private sector.

From our above analysis of the relevance of demand deficiency as a constraint on industrial growth, it should not be understood that supply-side factors such as raising the rate of saving and capital formation to accelerate economic growth are unimportant.

What is being emphasised here is that it is not adequate to rely merely on supply-oriented growth models such as the one used by IMF and World Bank whose structural adjustment reforms seek to tackle only supply-side factors determining economic growth to the utter neglect of the fact that economic growth may also be demand- constrained.

It is clear from above that the industrial growth in the developing countries may also be demand- constrained, apart from constraints of resources such as rate of saving, stock of capital, infrastructure facilities, and raw materials availability.

Investment Behaviour in Developing Countries:

Keynesian economics is also relevant to the developing countries with regard to its analysis of investment behaviour as distinct from the classical analysis. Classical economists did not distinguish between decision to save and decision to invest. According to them, decisions regarding saving and investment were coterminous. Keynes distinguished between decision to invest and save and argued that it was investment that determined saving and not the other way around. According to him, when investment goes up, income will increase through the operation of multiplier and at a higher level of income more will be saved.

An important contribution made by Keynes to the theory of investment refers to the role of business expectations in determining investment. According to him, the rate of investment is determined by rate of interest on the one hand and marginal efficiency of capital on the other. Marginal efficiency of capital refers to the expected rate of return on investment. The marginal efficiency of capital depends on the state of business expectations regarding future prospective yields from the investment currently made.

Notes

When businessmen become pessimistic about future prospective yields, the marginal efficiency of capital declines which adversely affects investment. This investment behaviour as visualised by Keynes is as much relevant to the investment in the modern sector of the developing countries as to the industrialised developed economies. Given this investment behaviour, "It is then no longer sufficient that the community's propensity to save should be stimulated. We also need to ensure that investment climate is suitably improved".

In building up favourable investment climate business expectations have to be influenced through appropriate fiscal and monetary measures adopted by the Government. Writing about investment behaviour in the contemporary countries, Prof. Chakravarty further writes, "Given the present state of technical knowledge, there is much greater use of fixed capital in industrial processes. Since decisions to invest in fixed capital imply commitment of resources to a prolonged and uncertain future, the question of time and uncertainty becomes crucial. At this stage we have to introduce the problem of expectations which bring us into the domain of Keynes' theory."

It may be noted that in the current context of slowdown in private investment which is an important factor causing slowdown in industrial growth, we can explain the decline in private investment in new shares and physical capital assets in terms of 'animal spirits', a term used by Keynes to refer to the waves of pessimistic and optimistic expectations of investors.

According to them, due to political uncertainty as well as due the uncertainty about the ability of the Government to pursue certain crucial economic reforms, there is lack of investors' confidence which has prevented them from investing in new shares and physical capital assets. The above analysis clearly brings out the relevance of Keynes' investment analysis to the developing countries.

10.5.Check your progress Questions.

Check your progress-1

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

1.What means Employment multiplier?

Check your progress-2

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

1.What are the two employment basic categories?

10.6.Answer to check your progress Questions.

Notes

1. Kahn's employment multiplier is a ratio of a change in total employment to the primary employment. Primary employment stands for the employment of the workers in public works like drainage, digging, roads, buildings, etc. As the workers are employed, they get income which increases aggregate demand and it leads to expansion of output in consumer goods industries, which in turn, leads to more employment, more demand for goods and machines and so on.

2. The economic base model divides employment into two major categories: 1) *export or basic industries* which produce and sell goods or services to markets outside the region and therefore bring in new income to the area; and, 2) *Local-Market Serving*, also called *service or residentiary industries* which produce and sell goods or services to the local market and therefore simply circulate existing income in the area. The export industries in a region make up the economic base.

10.7..Summary

In this unit you have learnt about the meaning interaction principle, employment multiplier, Keynesian revolution and concept of employment multiplier. This knowledge would make you understand what a employment multiplier and knowledge it can be worked at a employment level. The concept such as income and employment level. The concept such as income and employment multiplier would have made you to distinguish these activities from the employment multiplier activities and you might have learnt about the meaning and its application in the less development concept.

10.8.Key words

Employment multiplier, Demand Deficiency

10.9. Self Assessment Questions and Exercises.

Short Answer Questions

1. What means Employment multiplier?

2. What are the two employment basic categories?

Long answer Questions.

1.Explain Employment multiplier.

2.Explain about Keynesian Revolution and its Application to Less Developed Countries

10.10.Further Readings.

Ahuja, H.L. (2000), **"Macro Economics",** S. Chand and Company, New Delhi.

BLOCK IV: MACRO ECONOMIC ANALYSIS AND MODELS

UNIT-11: MACRO ANALYSIS

Structure:

11.1. Macro Analysis:

Macroeconomic analysis has a long tradition in the Institute and some of the most eminent members of the faculty have undertaken research in this area in the past. Currently, the Development Planning Centre (DPC) and the Reserve Bank of India (RBI) Endowment Unit of the Institute specialize in macroeconomic research. The focus of macroeconomic research at IEG is to carry out in-depth analysis of relevant macro issues for India and other developing countries, and to develop macro-models of the Indian economy.

The Development Planning Centre (DPC) specializes in macro-econometric analysis with special expertise in building macro-models, which are used for the analysis of macroeconomic behaviour and policy and for providing forecasts. This research programme was greatly stimulated after India began to implement the structural adjustment program in 1991. Since then, the research on macroeconomics has widened its scope from domestic closed economy models to open economy macro models.

The models and analysis also began to focus more and more on the market-determined behaviour of the exchange rate, interest rate, private investment and foreign trade.

The techniques of analysis have also been constantly updated. The simple regression analysis has been extended to structural macro modeling, time series analysis, co-integration, vector auto-regression (VAR) and

Bayesian forecasting. The econometric analysis now uses not only annual time series data but also higher frequency data, including quarterly and monthly data.

The DPC macro-model, which was initiated in 1996 with technical collaboration from the Indian Planning Commission, the Erasmus University, Rotterdam and the Netherlands Bureau of Economic Analysis and Policy, has reached a certain level of maturity, and is used to analyze a wide range of policy issues as well as provide forecasts for key macro variables.

A special emphasis in the DPC model was to analyse the behaviour of aggregate demand so that it could become complementary to the planning model. Currently, the model disaggregates the economy into three production sectors: agriculture, industry, and services. The model also analyses behaviour separately for the public and private sectors.

A major extension of the structural modeling programme has been the construction of state level macro-models.

This was initiated by a study assigned by the World Bank to regularly forecast growth and inflation rates for four states, namely, Andhra Pradesh, Karnataka, Tamil Nadu and Uttar Pradesh. Apart from structural macro modeling, the DPC has developed a time series model to forecast and analyze the monthly behavior of key macro variables, such as inflation, industrial growth, money growth, interest rates, exports, imports, exchange rate and foreign exchange reserves. Since 1998, this set of forecasts is released in the Monthly Monitor, a monthly publication of the Institute.

The faculty also does research on various macroeconomic issues, such as interest rate behavior, money supply mechanisms, capital flows, growth dynamics, regional inequality, exchange rate dynamics, financial markets and stock market behavior, commercial banking, etc.

Future research at the Development Planning Centre will continue to focus on econometric exercises and macro-models and that can analyze important macroeconomic issues.

These issues may include interactions between government expenditures in social sector services and labour productivity, possibility of synergy between government spending and private spending on social services such as education and health, interactions between physical infrastructure development and productivity of the various sectors and their impact on sustaining economic growth etc.

The inter-relationships governing employment, poverty reduction and income distribution may also be looked into as will be the implications of the 9% GDP growth target during the Eleventh Plan for agricultural demand and the likely agricultural demand-supply scenarios corresponding to a 4% growth in agriculture.

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Possibility of endogenously determining the rate of poverty and employment levels by relating it with growth and income distribution will be attempted. Effect of major asset generation and wage employment generation programmes, on the income of the lower income groups, on the output of different sectors of the economy, and on government finances will also be studied.

The Reserve Bank of India Endowment (RBI) Unit is funded by an endowment grant from the Reserve bank of India. The unit undertakes analysis of various issues relating to macroeconomics, open economy macroeconomic issues and economic reforms. The unit's emphasis is on applied econometric and causality analysis using the recent time series techniques. Some of the research studies at RBI have been in the following areas

I. Savings behaviour in India and other developing countries and direction of causality between savings and growth

II. Investment behaviour in India and other developing countries and direction of causality between investment and growth

III. Financial liberalization, developments in banking and finance, monetary policy, optimal level of interest rate, etc.

IV. Financial deepening in Asian countries; financial development in Asian countries and exchange rate behaviour, and causes and consequences of Argentina's crisis.

V. Foreign direct investment (FDI), FDI and exports competitiveness, FDI and technology transfer, FDI impact on investment and economic growth.

VI. Foreign Trade Issues: WTO and Regional trading agreements; China's entry into the WTO: implications for China and India; TRIPS and India's Pharmaceuticals Industry and European Union Enlargement: Impact on India-EU Trade.

VII. Impact of reforms on exports, employment and poverty; determinants of employment and wages; impact of economic growth and job security on employment and wages and growth, poverty and inequality in India.

The research output on above issues has been published in numerous international and Domestic Research Journals (such as Journal of Development Studies, Journal of Economic Behavior and Organization, Applied Economics, Economics Letters, Journal of Economics, The Economic and Political Weekly, etc)

The macroeconomic research at RBI Unit includes both individually initiated and sponsored policy oriented studies. Faculty members lend their expertise to both national and international organization in carrying out important macroeconomic studies. Over the past 7 years, the RBI Unit has undertaken research studies for the World Bank, USA; International

Development Research Centre (IDRC), Canada; Department for International Development, U.K.; Swiss International Development Agency, Geneva, Shastri Indo Canadian Institute, South Asia Network of Research Institutes (SANEI) Ministry of Finance, Government of India; and others.

In recent years, Indian Economy has experienced high growth rate of more than 8 percent and seems poised to achieve double-digit growth rates. This high growth rate of Indian economy with structural changes poses lot of challenges for macroeconomic management. In this context, macroeconomic research at RBI Unit is likely to involve research on following issues in future

I. Determinants of poverty, employment and wages in India; role of expenditure on health, education and social welfare on poverty.

II. Infrastructure development in India and South Asia; the role of private sector and private-public partnership for infrastructure development.

III. FDI in South Asia: Policy, trends, determinants and impact.

IV. Analysis of determinants of market (or index) prices, price equity ratio in share market and impact of foreign institutional investments.

V. Modeling foreign exchange reserves to find optimal level of foreign exchange reserves for India.

VI. Econometric estimation of the determinants of exports in India and South Asia.

11.2. MACRO ANALYSIS: POST KEYNESIAN – .MEANING

While developing his theory of effective demand, Keynes introduced three important building blocks of modern macroeconomics:

(i) The relation of consumption to income, from which emerges the multiplier mechanism, which explains how shocks to demand can be amplified and lead to larger shifts in output.

(ii) Liquidity preference (the demand for money), which explains how monetary policy can affect interest rates and aggregate demand.

(iii) The importance of expectations in affecting consumption and investment; and the idea that animal spirits (shifts in expectations) are a major factor behind shifts in demand and output.

The GT offered clear policy guidelines which were quite in tune with the times. There was no automatic mechanism for the economy to move from depression to recovery and then to prosperity. During depression it was dangerous to balance the budget.

It would make things worse. Keynes suggested that during depression

Notes

the government should deliberately incur a deficit in the budget to stimulate the economy. Government expenditure would add to private expenditure in determining aggregate demand and, thus, the volume of aggregate output and the level of employment. In other words, there was need to use discretionary fiscal policy to ensure a high level of employment.

The Neo-Classical Synthesis:

Within a decade or so, the GT had transformed macroeconomics. By the early 1950s, attempts were made to integrate many of Keynes' ideas with those of classical economists. This integration was called by Paul Samuelson the great neo-classical synthesis, i.e., the synthesis of the classical (monetary) analysis and the Keynesian (income) analysis.

11.3. Its Importance.

Current Developments of Post-Keynesian Macroeconomics:

Three current developments since the late 1980s have been:

(i) New Classical Economics and Real Business Cycle Theory:

While criticizing the Keynesian economics, Lucas offered an alternative interpretation of fluctuations. To him, economic fluctuations are largely the effects of shocks in competitive markets with completely flexible wages and prices.

Lucas' research has been pursued by the new classicists. Edward Prescott and his coworkers developed real business cycle (RBC) models on the basis of the Lucas framework. These models explain equilibrium business cycles since their basic assumption is that output is always at its natural level.

This means that all output fluctuations are movements of the natural level of output, as opposed to movements of output away from the classical benchmark (i.e., the full-employment level). Business cycles are equilibrium-real phenomena, driven largely by productivity shocks. Endogeneity of the money stock accounts for the inflation-or money-output link.

The most fully worked out RBC model is that of Prescott (1982). There is a representative argument, and an infinite horizon intertemporal maximiser. Production inputs are labour, capital and inventories. In the RBC models, intertemporal substitution of labour causes output fluctuations. The economy is hit by imperfectly observed productivity shocks, which are a mixture of permanent and transitory components.

RBC theories suggest that innovations or productivity shocks in one sector can spread to the rest of the economy and cause recessions and booms. In this new classical approach, cycles are caused primarily by shocks to aggregate supply and not by changes in aggregate demand.

According to Prescott, output movements occur solely due to technological progress. With new technology, productivity increases. As a result, output increases. An increase in labour productivity leads to an increase in the wage rate. This induces the workers to put in extra effort.

Thus, productivity increases lead to increases in output and employment. This is what is found in the real world.

However, the RBC approach has been criticised mainly on the ground that technological progress is the result of various diverse innovations, each taking a long time to get transmitted throughout the economy. How this could generate the large short-run fluctuations in output, which are observed in the real world, is not yet transparent.

Likewise, how could recessions occur and output and employment fall due to adverse technology shocks (e.g., a sudden technological change may make a firm's capital stock obsolete) is beyond anyone's comprehensive power. Finally, empirical evidence lends considerable support to the view that changes in money supply exert strong influence on output in clear and predictable way.

In spite of all these criticisms, the RBC approach provides an important insight into the theory of fluctuations: all short-run fluctuations in output are not deviations of actual output from its natural level. In short, the new classical approach focused on identifying how much of the fluctuations can be treated as movements in the natural level of output and in the rate of unemployment.

(ii) New Keynesian Economics:

The new classical economists have attempted to explain short-run fluctuations by exploring the nature and implications of the various types of imperfections in different markets. One group of economists have focused on the notion of efficiency wages—the idea that wages, if perceived by workers as being too low, may lead to shirking by workers on the job, to problems of morale within the firm, to difficulties in recruiting or keeping good workers, and so on. Efficiency wages, wages above the market clearing level, are given to prevent the exit of productive workers. However, efficiency wages create real wage rigidity and involuntary unemployment.

Fischer and Taylor have focused on nominal rigidity and have clearly demonstrated that with the staggering of wage or price decisions, output can deviate from its natural level for a long time. In this context, G. Akerloff and N. G. Mankiw have derived a surprising and important result, referred to as the menu cost explanation of output fluctuations.

Each firm is largely indifferent as to when and how often it changes its own price. For example, a retailer may feel that his profit remains more or less unaffected whether he changes his price on a daily or weekly basis.

Therefore, even small costs of changing prices—like the costs involved in printing a new menu—can lead to discrete and staggered price adjustment. This staggering leads to slow adjustment of the average price level and to large aggregate output fluctuations in response to movements in aggregate demand.

This means that decisions that do not matter much at the micro-level (how often to change prices) lead to large aggregate effects (slow price

adjustment and shifts in aggregate demand that have a large effect on output).

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In short, the focus of New Keynesian approach was on identifying the precise nature of market imperfections and nominal rigidity that give rise to deviations of output from its natural level.

(iii) New Growth Theory:

New growth theory developed by Robert Lucas and Paul Romer addressed two key issues:

(i) The determinants of technological progress; and

(ii) The role of increasing returns to scale, i.e., whether doubling capital and labour can actually cause output to get more than doubled.

The focus of new growth theory was on the effects of research and development on technological progress and the interaction between technological progress and unemployment. Carrying the works of Lucas and Romer a step further, P. Aghion and P. Hewitt have developed a Schumpeterian theme of the 1930s, the notion that growth is a process of creative destruction, in which new products are constantly introduced—making old ones obsolete.

In short, the focus of the new growth theory was on identifying the factors responsible for technological progress and growth in the long run.

Common Beliefs of Post-Keynesian Macroeconomics:

Macroeconomists agree on certain points and disagree on others. So, we summarise our brief survey of macroeconomics thus:

A. Areas of Agreement:

The basic set of propositions on which most macroeconomists agree are:

(i) Short Run:

In the short run, shifts in aggregate demand affect output. Higher consumer confidence, a larger budget deficit, and further growth of money are all likely to increase output and to reduce cyclical unemployment.

(ii) Medium Run:

In the medium run, output returns to the natural level of output, which depends on the natural rate of unemployment (which, together with the size of the labour force, determines the level of employment), the stock of capital and, of course, the state of technology.

(iii) Long Run:

Output depends on capital accumulation and the rate of technological progress.

(iv) Monetary Policy:

It affects output only in the short run. In the long run, a high rate of money growth only leads to a higher rate of inflation. Thus, money has a neutral effect on the economy.

(v) Fiscal Policy:

If the budget deficit increases, output is likely to increase even in the short run. It has no effect on output in the medium run. It is likely to reduce capital accumulation and output in the long run.

Notes

B. Areas of Disagreement:

(i) Length of the 'Short Run':

Economists disagree over the duration of the short run during which aggregate demand affects output. At one extreme, RBC theories start from the assumption that output is always at the natural rate level. The 'short run' is indeed very short. At the other extreme, the study of slumps and depressions implies a prolongation of the effects of demand.

In other words, the effects of demand may be extremely long-lasting. So, the 'short run' may be very long.

(ii) The Role of Policy:

Those who believe that output quickly comes back to its natural rate level are in favour of imposing tight rules on both types of demand management policies— from constant money growth to the requirement of a balanced budget. Those who believe that the adjustment is slow advocate the adoption of more flexible stabilisation policies.

11.4.Check your progress Questions.

Check your progress-1

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

1.Define DPC?

Check your progress-2

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit

1.Define New growth Theory?

11.5.Answer to check your progress Questions.

1.The Development Planning Centre (DPC) specializes in macro-econometric analysis with special expertise in building macro-models, which are used for the analysis of macroeconomic behaviour and policy and for providing forecasts. This research programme was greatly stimulated after India began to implement the structural adjustment program in 1991. Since then, the research on macroeconomics has widened its scope from domestic closed economy models to open economy macro models.

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2. New growth theory developed by Robert Lucas and Paul Romer addressed two key issues:
(i) The determinants of technological progress; and

(ii) The role of increasing returns to scale, i.e., whether doubling capital and labour can actually cause output to get more than doubled.

11.6..Summary

In this unit you have learnt about the meaning and importance of macro analysis. This knowledge would make you understand what is macro analysis and how it can be functioned at a macro analysis level. The concept such as macro economic analysis and models would have made you to distinguish these activities from the macro analysis and you might have learnt about the meaning and its importance in the macro economic analysis.

11.7.Key words

Short run, New growth theory, Neo classical synthesis

11.8. Self Assessment Questions and Exercises.

Short Answer Questions

1.Define Macro Analysis?

2.Define Fiscal Policy?

Long answer Questions.

1.Explain the Macro Analysis.Post Keynesian

2.Explain the importance odfMacro Analysis.

11.9.Further Readings.

Mithani, D.M. (2003), **"Modern Economic Analysis",** Himalaya Publishing House, Mumbai.

UNIT-12: GENERAL EQUILIBRIUM OF MONETARY AND REAL SECTOR.

Notes

Structure:

12.1. General Equilibrium of Monetary and Real Sector.

1. Meaning of General Equilibrium:

General equilibrium analysis is an extensive study of a number of economic variables, their interrelations and interdependences for understanding the working of the economic system as a whole. It brings together the cause and effect sequences of changes in prices and quantities of commodities and services in relation to the entire economy.

An economy can be in general equilibrium only if all consumers, all firms, all industries and all factor-services are in equilibrium simultaneously and they are interlinked through commodity and factor prices. As Stigler has said: "The theory of General Equilibrium is the theory of interrelationship among all parts of the economy."

General equilibrium exists when all prices are in equilibrium; each consumer spends his given income in a manner that yields him the maximum satisfaction; all firms in each industry are in equilibrium at all prices and output; and the supply and demand for productive resources (factors of production) are equal at equilibrium prices.

2. Assumptions:

The general equilibrium analysis is based on the following assumptions:

(1) There is perfect competition both in the commodity and factor markets.

(2) Tastes and habits of consumers are given and constant.

(3) Incomes of consumers are given and constant.

(4) Factors of production are perfectly mobile between different occupations and places.

(5) There are constant returns to scale.

(6) All firms operate under identical cost conditions.

(7) All units of a productive service are homogeneous.

(8) There are no changes in the techniques of production.

Notes

(9) There is full employment of labour and other resources.

3. Working of the General Equilibrium System:

Given these assumptions, the economy is in a state of general equilibrium when the demand for every commodity and service is equal to the supply for it. It implies perfect harmony of the decisions made by all the market participants. The decisions of consumers for the purchase of each commodity must be in perfect accord with the decisions of producers for the production and sale of each commodity.

Similarly, the decisions of owners for selling each factor service must be in perfect harmony with the decisions of their employers. It is only when the decisions of buyers of goods and services fit in perfectly with the decisions of sellers that the market is in general equilibrium.

Product Market:

Given the tastes, preferences and aims of the consumers in the economy, the quantity of each commodity demanded depends not only on its own price but also on the price of each other commodity available in the market. Thus, each consumer maximizes his satisfaction relative to the prices ruling the market. For him, the marginal utility of each commodity equals its price.

Each consumer is assumed to spend his entire income on consumption, so his expenditure equals his income. His income, in turn, depends on the prices at which he is selling his productive services. In other words, a consumer earns by selling the productive services he owns. Thus, the demand of consumers for the various commodities depends upon their prices and the prices of services.

Let us take the supply side. Given the market structure, the state of technology and the aims of firms, the price at which a commodity sells depends on its costs of production. The costs of production, in turn, depend on the quantities of the various productive services employed and the prices paid for them.

Assuming constant returns to scale and identical cost conditions for all firms, each producer will produce and sell that quantity of output at which the demand price for the commodity equals both the minimum average cost and the marginal cost. The equilibrium of the commodity market is illustrated in Figure 1 (A).

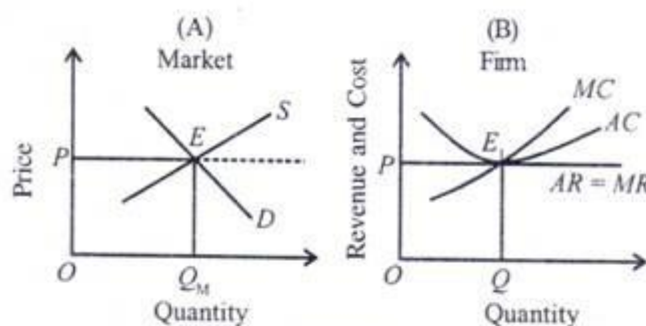


Fig. 1

The market is in equilibrium at point E where the market demand and supply curves D and S intersect. It determines OP price at which OQ_M quantity of the product is bought and sold in the market. There being identical cost conditions, each firm in the market produces and sells the commodity at the given price OP.

It is in equilibrium when MC=MR and AC=AR at point E_1producing OQ units of the commodity, as shown in Panel B. If, say, there are 100 firms in the market each producing 60 units of the commodity, the total production will be 6000 (=100 x 60) units. This analysis inter alia can be extended to all commodities being produced in the economy.

Factor Market:

Like the equality of demand and supply of commodities, the equality of demand and supply of factor services is also essential for the general equilibrium system. The demand for productive services comes from the producers and supply from the consumers. Given the state of technology and the profit maximisation objective of the producers, the quantity of a factor used in producing a commodity depends on the relationship between the prices of that factor and of all other factors and on the prices of commodities.

Each producer maximises his profits relative to the ruling factor prices by employing the various factors in such proportions and quantities that their marginal revenue productivities are equal to their prices. Since there is full employment in the economy, the markets for factors are in equilibrium when the total quantities of factors offered and the total quantities employed are equal.

The equilibrium of the factor market is illustrated in Figure 2, where in Panel (A), the price of a factor OP and its quantity ON are determined in the market by the interaction of its demand and supply curves D and 5 respectively at point E. Panel (B) shows that the supply curve of this factor to an individual firm is perfectly elastic and is the same as the marginal cost of that factor, MFC.

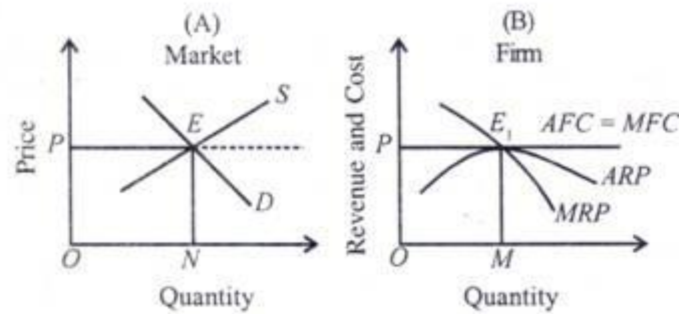


Fig. 2

The firm will employ units of the factor at the given factor price OP where MFC=MRP and average factor cost, AFC=ARP (average revenue product) to the firm. Such an equilibrium point is E_1 at which it employs OM units of the factor. If there are 10 identical cost firms and each employs 100 units of the factor, the total market demand and supply of this factor will be 1000 units in the market. This analysis can be extended to the economy as a whole.

Thus the economy is in general equilibrium when commodity prices make each demand equal to its supply and factor prices make the demand for each factor equal to its supply so that all product markets and factor markets are simultaneously in equilibrium.

Such a general equilibrium is characterised by two conditions in which the set of prices in all product and factor markets is such that:

(1) All consumers maximise their satisfactions and all producers maximise their profits; and

(2) All markets are cleared which means that the total amount demanded equals the total amount supplied at a positive price in both the product and factor markets.

To explain it, we begin with a simple hypothetical economy where there are only two sectors, the household and the business. The economic activity takes the form of flow of goods and services between these two sectors and monetary flow between them.

These two flows which are called real and monetary are shown in Figure 3 where the product market is shown in the lower portion and the factor market in the upper portion. In the product market, consumers purchase goods and services from producers while in the factor market, consumers receive income from the former for providing services.

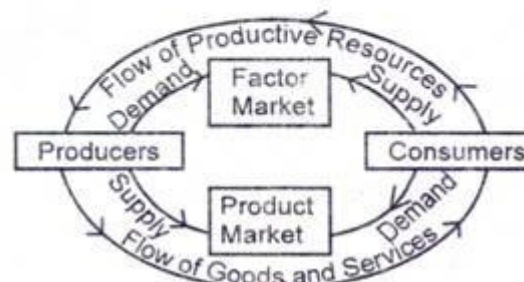


Fig. 3

Thus consumers purchase all goods and services provided by producers and make payments to the latter in lieu of these. The producers, in turn, make payments to consumers for the services rendered by the latter to the business, wage payments for labour services, interest for capital supplied, etc. Thus payments go around in a circular manner from producers to consumers and from consumers to producers, as shown by arrows in the outer portion of the figure.

There are also flows of goods and services in the opposite direction to the money payments flows. Goods flow from the business sector to the household sector in the product market, and services flow from the household sector to the business sector in the factor market, as shown in dies inner portion of the figure.

These two flows are linked by product prices and factor prices. The economy is in general equilibrium when a set of prices is allowed at which the magnitude of income flow from producers to consumers is equal to the magnitude of the money expenditure from consumers to producers.

4. Limitations:

The general equilibrium analysis of the economy has several limitations:

1. It is based on a number of unrealistic assumptions which are contrary to the actual conditions prevailing in the world. Perfect competition, the very basis of this analysis, is a myth.

2. It is a static analysis. All consumers and producers in this analysis consume and produce the same products day in and day out without any time-lag. Their tastes, preferences, and aims are the same, and their economic decisions are in perfect harmony with each other.

In reality, nothing of this sort happens. Producers and consumers never act and think alike. Changes are taking place continuously in tastes and preferences. There are no constant returns to scale and no two factor services are homogeneous. Thus cost conditions differ from producer to producer. Since the given conditions are continuously changing, the movement towards general equilibrium is ever thwarted and its attainment has ever remained a wishful ideal.

3. Prof. Stigler regards general equilibrium as a misnomer. According to him, “No economic analysis has ever been general in the sense that it considered equilibrium studies as more inclusive than partial equilibrium studies, never that they are complete. Moreover, the more general the analysis, the less specific its content must necessarily be.”

12.2.Check your progress Questions.

Check your progress-1

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

Notes

Check your progress-2

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

12.3.Answer to check your progress Questions.

1. Given the tastes, preferences and aims of the consumers in the economy, the quantity of each commodity demanded depends not only on its own price but also on the price of each other commodity available in the market. Thus, each consumer maximizes his satisfaction relative to the prices ruling the market. For him, the marginal utility of each commodity equals its price.

2. Each producer maximises his profits relative to the ruling factor prices by employing the various factors in such proportions and quantities that their marginal revenue productivities are equal to their prices. Since there is full employment in the economy, the markets for factors are in equilibrium when the total quantities of factors offered and the total quantities employed are equal.

12.4..Summary

In this unit you have learnt about the meaning and the concept of general equilibrium of monetary and real sector. This knowledge would make you understand what a general equilibrium of monetary and how it can be worked at a general equilibrium economy and real sector would have made you to distinguish these activities from the equilibrium activities and you might have learnt about the meaning and working in the sector.

12.5.Key words

Product Market, Labour Market, General Equilibrium

12.6. Self Assessment Questions and Exercises.

Short Answer Questions

1.Define General Equilibrium.

2.Mention any two assumptions of General Equilibrium.

Long answer Questions.

1.Explain the General equilibrium.

2.Explain the involvement of Product market and Factor market in General Equilibrium.

12.7.Further Readings.

Shapiro, Edward (2008), **"Macro Economic Analysis",** Galyotia Publications, New Delhi.

UNIT-13: MACRO ECONOMIC MODEL: CONTRIBUTION OF HICKS, HANSON: IS-LM DIAGRAM.

Structure:

13.1. Macro Economic Model: Contribution of Hicks, Hanson: IS-LM Diagram.

The two economists after Keynes, J. R. Hicks (1904-1989) and Alvin Hansen (1887-1975), have shown that although both the classical and r Keynesian theories of interest are indeterminate, they together may give us a complete and determinate theory of interest. The theory of Hicks and Hansen, made up of these two theories, is known as the Hicks-Hansen theory of interest.

Determination of the Rate of Interest in Hicks-Hansen Theory:

The IS curve passes through the (r, y) combinations that satisfy the condition s(r, y) = i(r). This condition is the equilibrium condition in the capital market as also the equilibrium condition in the goods market.

On the other hand, the LM curve passes through the (r, y) combinations that satisfy the condition L(r, y) = M (the money supply in real terms), which is the equilibrium condition in the money market. Therefore, the (r, y) combination that would be obtained at the point of intersection of these two curves (IS and LM), would give us simultaneously the equilibrium in the goods market and that in the money market.

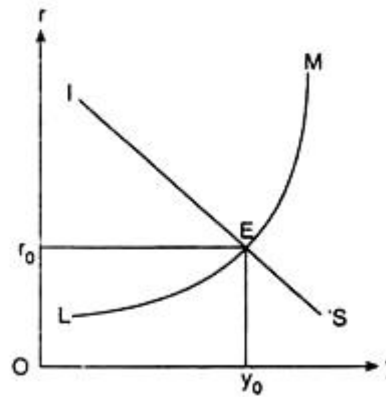


Fig. 17.16 Equilibrium in the IS-LM model

In Fig. 17.16, E is the point of intersection of the IS and LM curves. At the point E, we obtain that if the economy's level of income and the rate of interest be y_0 and r_0, then the goods market and the money market would be in equilibrium simultaneously.

Here the equilibrium in the goods market or equilibrium in the level of income cannot be disturbed by the lack of equilibrium in the money market giving rise to a change in the rate of interest and in the level of investment.

Also, the equilibrium in the money market cannot be disturbed by the disequilibrium in the goods market leading to change in the level of income and the rate of interest.

Therefore, the Hicks-Hansen IS-LM theory is able to determine a unique equilibrium rate of interest (r_0 in Fig. 17.16) along with a unique equilibrium level of income (y_0 in Fig. 17.16). That is why the IS-LM theory may be considered to be a complete theory of interest rate determination.

Elementary IS LM Model

Introduction

The ISLM model (Investment Saving/Liquidity preference Money supply) is a macroeconomic tool that demonstrates the relationship between interest rates and real output in the goods and the money market. The intersection of the IS and LM curves is the "General Equilibrium" where there is simultaneous equilibrium in both markets. This model was originally developed by John R. Hicks in his article, ―Mr. Keynes and the Classics – A Suggested Interpretation‖. Although disputed in some circles and accepted to be imperfect, the model is widely used and seen as useful in gaining an understanding of macroeconomic theory. It is used in most university macroeconomics textbooks. Thus, ISLM model is a macroeconomic model that graphically represents two intersecting curves, called the IS and LM curves. The investment/saving (IS) curve is a variation of the income-expenditure model incorporating market interest rates (demand for this model), while the liquidity preference/money supply equilibrium (LM) curve represents the amount of money available for investing (supply for this model). The model attempts to explain the investing decisions made by investors given the amount of money they have available and

the interest rate they will receive. Equilibrium occurs when the amount of money invested equals the amount of money available for investing.

According to the Classical Theory, monetary policy has no effects on the level of real economic variables (such as output, consumption, savings, investment and the real interest rate). In the Classical Theory it is assumed that all prices and (nominal) wages are perfectly flexible both in the short-run and the long-run. Thus, an increase in the level of the money supply M will increase proportionally the price level P (and the level of the exchange rate S in an open economy) with no real effects. An increase in the rate of growth of the money supply will increase proportionally the rate of inflation , the nominal interest rate (and the rate of currency depreciation) and will have no real effect on Y, C, I, r. On the other hand, the basic idea of the Keynesian Theory (IS/LM model) is that prices (and nominal wages) are not flexible in the short-run: they do not clear markets in the short-run. In other terms, there is inertia in the setting of prices (especially when the economy is operating below full capacity /full employment). The rationale of assuming that prices are sticky is that firms and businesses do not change the prices of the goods they sell on a continuous basis. Thus, IS-LM model shows how the level of national income and rate of interest are jointly determined by the simultaneous equilibrium in the two interdependent goods and money markets. At present IS-LM model is a standard tool of macro economics and the effects of monetary and fiscal policies are discussed using this IS and LM curves model.

One Sector Neo Classical Model

Equilibrium Condition (Money Market Equilibrium):

For equilibrium in the money market, the demand for money must be equal to the supply of money (stock of money).

i.e. $M^D = M^S$ ----- (2)

Where, MS is the Money Supply (nominal).

Substituting (2) in (1) we get $M^S = kyP$

This means that if money supply is increased a new equilibrium can be achieved only if the demand for money increases to match the increased money supply. If real income and k are fixed, the only way to reach equilibrium is by a rise in the price level.

Thus, in the neoclassical one sector model ‗y‘and M^S are exogenous whereas P is endogenous.

Policy Implications

1. An increase in money supply will increase only the price level but the real variables are unaffected by money supply.
2. The price mechanism enables a decentralized economy to adjust itself.

One Sector Keynesian Model The Simple Keynesian Model

The simple Keynesian model includes only the goods market and it shows an equilibrium level of output where goods market and labour market do not clear and so capital stock and labour force are not fully employed.

Assumptions of the model

3. The Price level is fixed.
4. The stock of capital and the labour force are constant and determines the maximum level of real output.
5. Firms are profit maximisers and it is a short run model.

Model

The model solves for the equilibrium level of real output that has no tendency to change. **Equilibrium**

Equilibrium requires that the supply of real national output equals the quantity of national output (demand for output). Here consumption and income are the endogenous variables.

Diagram (Keynesian Cross Diagram)

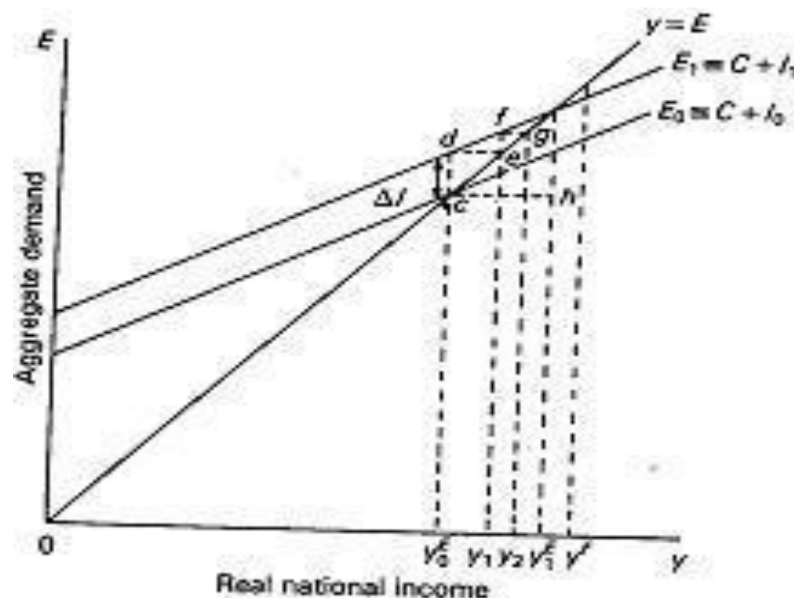


Figure The Keynesian One Sector Model

The equilibrium condition is given by the 45^o line along which y = E. Aggregate Demand, AD is given by the $E_O \equiv C_O + I_O$ schedule, the slope of which depends on the marginal propensity to consume. The two lines cross at equilibrium level of output, y_O^E. If level of aggregate demand increases from E_O to E_1, the equilibrium level of output will rise from y_O^E to y_1^E because output is perfectly elastic at current (fixed) prices.

Implications

1. If aggregate demand is greater than full

employment level of output, output produced is limited to full employment level y_f.

2. If aggregate demand greater than full employment, the assumption of fixed prices is not correct.

The crucial feature of the Keynesian model is that it can solve for an equilibrium level of output at which the capital stock and labour force are not fully employed. The goods market does not clear because firms are willing to sellers output at current prices but cannot find customers.

DERIVATION OF IS LM CURVES IN A TWO SECTOR MODEL:

Introduction

The IS/LM model combines the goods and money market equilibrium's to form an aggregate model that describes a general equilibrium setting in the economy. The general equilibrium model of the economy consists of two parts. The first part brings together the determinants of equilibrium in the real sector or goods market of the economy. The second part brings together the determinants of equilibrium in the money market or monetary sector of the economy. The equilibrium in the real sector is defined in terms of the equality between the aggregate saving and aggregate investment. Corresponding to that aggregate real income, the aggregate demand for goods just equals the aggregate supply of goods in the economy (C+I = Y). The money market equilibrium requires equality between the total supply of money and the total demand which brings the equilibrium rate of interest. In short, general equilibrium requires simultaneous equilibrium in goods and money markets. The existence of equilibrium in one market does not necessarily mean that the entire system is in equilibrium. General equilibrium requires that the level of income and the rate of interest must bring equality between saving and investment and also the demand for money equals the supply of money.

Thus, the ISLM model integrates money, interest and income into a general equilibrium model of product and money markets by Hicks and Hansen. The term IS the shorthand expression of the equality of investment and saving which represents the product market equilibrium. On the other hand, the term LM is the shorthand expression of the equality of money demand (L) and money supply (M) and represents the money market equilibrium. For the analysis of general equilibrium or real and monetary sector, we should bring the product and money markets to the scene. In other words, we should study the derivation of the IS and LM functions and should understand their slope for analyzing the effectiveness of monetary and fiscal policies.

Derivation of the IS Curve

Aggregate expenditure depends on real income and the real interest rate, as well as other autonomous influences (including the price level). The combination of real interest rates and real income levels that result in equilibrium in the goods market is called the IS curve. The IS curve graphically shows the relationship between the interest rate and aggregate output from the demand side of the model. The derivation of the IS curve can be taken from the dynamics of the aggregate demand function Y = C + I, where output (Y) is equal to consumption (C) and (I) represents Income. For the IS curve, the independent variable is the interest rate and the dependent variable is the level of income (even though the interest rate is plotted vertically). The IS curve is drawn as downward-sloping with the interest rate (i) on the vertical axis and income Y, on the horizontal axis. The initials IS stand for "Investment and saving equilibrium". Thus the IS curve is a locus of points of equilibrium in the "real" (non-financial) economy. Given expectations about returns on fixed investment, every level of the real interest rate (i) will generate a certain level of planned fixed investment and other interest-sensitive spending. Lower interest rates encourage higher fixed investment and the like. Income is at the equilibrium level for a given interest rate when the saving that consumers and other economic participants choose to do out of this income equals investment. The multiplier effect of an increase in fixed investment resulting from a lower interest rate raises real income. This explains the downward slope of the IS curve. In summary, this line represents the causation from falling interest rates to rising planned fixed investment to rising national income and output.

The derivation of the IS curve is shown in Figure 5.2 In Panel (A) of this figure, the saving curve S in relation to income is drawn in a fixed position on the Keynesian assumption that the rate of interest has little effect on saving. The saving curve shows that saving increases as income increases. In other words, saving is an increasing function of income. On the other hand, investment depends on the rate of interest and the level of income. Given a level of interest rate, the level of investment, rises with the level of income. At a 5 per cent rate of interest, the investment curve is I_2. If the rate of interest is reduced to 4 per cent, the investment curve will shift upward to I_3. The rate of investment will have to be raised to reduce the marginal efficiency of capital to equate with the lower rate of interest. Thus the investment curve I_3 shows more investment at every level of income. Similarly when the rate of interest is raised to 6 per cent, the investment curve will shift downward to I_1.

The reduction in the rate of investment is essential to raise the marginal efficiency of capital to equate with the higher interest rate. In Panel (B) we drive the IS curve by marking the level of income at various interest rates. Each point on this IS curve represents a level of income at which saving equals investment at various interest rates. The rate of interest is represented on the vertical axis and the level of

income on the horizontal axis. If the rate of interest is 6 per cent, the S curve intersects the I_1 curve at E_1 which determines OY_1 income. From this income level, which equals Rs.100 crores we draw a dashed line downward to intersect the extended line from 6 per cent at point A. At interest rate 5 per cent, the S curve intersects the I_2 curve at E_2 so as to determine OY_2 income (Rs 200 crores). In the lower figure, the point B corresponds to 5 per cent interest rate and Rs 200 crores income level. Similarly, the point C corresponds to the equilibrium of S and I_3 at 4 per cent interest rate. By connecting these points A, B and c with a line, we get the *IS* curve. The IS curve slopes downward from left to right because as the interest rate falls, investment increases and so does income. In other words, there is a negative relationship between income and interest rate in the real sector of the economy.

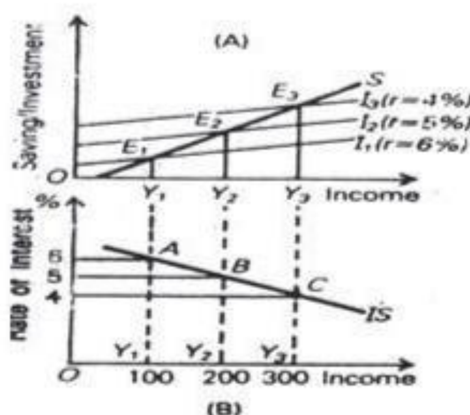


Figure Derivation of IS Curve

The Slope of the IS Curve

Figure shows that the IS curve slopes downward from left to right. This negative slope reflects the increase in investment and income as the rate of interest falls. The *IS* curve may be flat or steep depending on the sensitiveness of investment to changes in the rate of interest, and also on the size of the multiplier.

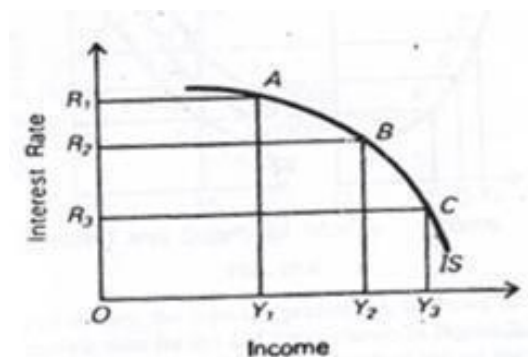


Figure Slope of IS Curve

If investment is very sensitive to the rate of interest, the *IS* curve is very flat. This is shown by the segment AB of the IS curve in Figure 5.3 where a small fall in the rate of interest from R_1 to R_2 leads to a

proportionately large rise in income from Y_1 to Y_2. The IS curve is interest elastic in the AB segment of the IS curve.

On the other hand, if investment is not very sensitive to the rate of interest, the IS curve s relatively steep. In terms of Figure 5.3, when the rate of interest falls from R_2 to R_3, income increases by a relatively smaller amount Y_2 Y_3. The BC segment of the IS curve is less interest elastic. Any further fall in the rate of interest from R_3 will lead to no change in income because the *IS* curve is vertical in that range. It is interest inelastic. The shape of the IS curve also depends upon the size of the multiplier. If the size of the multiplier is large, income is more sensitive to changes in the interest rate and the IS curve is flatter.

Shifts in the IS Curve

The *IS* function shifts to the right with a reduction in saving. Reduction in saving may be the result of one or more factors leading to increase in consumption. Consumers may like to buy a new product even by reducing saving. The community's wealth may increase due to government's policy and the wealth holders do not like to save the same amount than before. Consumers may start buying more in anticipation of shortages or price rise thereby reducing saving.

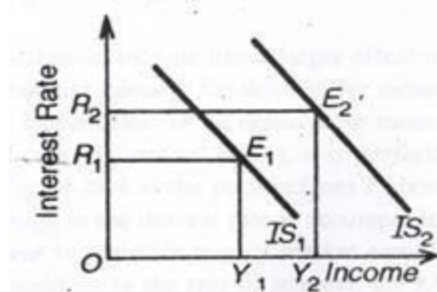


Figure Shifts in the IS Curve

The IS function also shifts to the right by an autonomous increase investment. The increase in investment may result from expectations of higher profits in the future, or from innovation, or from expectations concerning increase in the future demand for the product, or from a rise of optimism in general. Moreover, government's expenditure and tax policies have the effect of shifting the *IS* function.

In all these cases, the IS function will shift to the right, equal to the decrease in the supply of saving times the multiplier or the increase in the investment times the multiplier. With the increase in the autonomous investment (or reduction in saving), the IS curve shifts from IS_1 to IS_2 and the new equilibrium is established at point E_2 which indicates a higher level of income Y_2 at a higher interest rate, as

shown in Figure 5.4.

In the opposite case when investment falls or saving increases, the IS function will shift to the left and the equilibrium will be established at a lower level of income and interest rate. This situation can be explained by assuming IS_2 as the original curve.

THE MONEY MARKET EQULIBRIUM

Equilibrium in the money market implies equality between the demand and supply of money. That is $M_D = M_S$. If the demand for money is greater than its supply, the rate of interest has a tendency to increase under the pressure of increased selling of the bonds in the stock market for cash. On the Contrary, an excess of supply of money over its demand will make the investors utilize their surplus cash for the purchase of bonds. This will push up the bond prices and will set a falling tendency in the rate of interest. Thus equilibrium in the financial sector requires that the demand for money equals the stock of money and the demand to hold bonds also equals the stock of bonds supplied.

Denoting M_D for money demand and M_S for money supply, in equilibrium $M_D = M_S$. The money supply function for this situation is plotted on the same graph as the liquidity preference function. The money supply is determined by the central bank decisions and willingness of commercial banks to loan money. Though the money supply is related indirectly to interest rates in the very short run, the money supply in effect is perfectly inelastic with respect to nominal interest rates (assuming the central bank chooses to control the money supply rather than focusing directly on the interest rate). Thus the money supply function is represented as a vertical line - money supply is a constant, independent of the interest rate, GDP, and other factors. Mathematically, the LM curve is defined by the equation M / P = L (i,Y), where the supply of money is represented as the real amount M/P (as opposed to the nominal amount M), with P representing the price level, and L being the real demand for money, which is some function of the interest rate i and the level Y of real income. The LM curve shows the combinations of interest rates and levels of real income for which money supply equals money demand—that is, for which the money market is in equilibrium.

The demand for money $L = L_1 + L_3$ where L_1 is the transactions demand for money which is a direct function of the level of income, $L_1 = f(Y)$. L_3 is the speculative demand for money which is a decreasing function of the rate of interest, $L_3 = f(r)$. Thus in money market equilibrium, $M = L_1(Y) + L_3(r)$. For a given level of income, the intersection point between the liquidity preference and money supply functions implies a single point on the LM curve: specifically, the point giving the level of the interest rate which equilibrates the money market at the given level of income. Recalling that for the LM curve, the interest rate is plotted against real GDP (whereas the liquidity preference and money supply functions plot interest rates

against the quantity of cash balances), an increase in GDP shifts the liquidity preference function rightward and hence raises the interest rate. Thus the LM function is positively sloped.

For the LM curve, the independent variable is income and the dependent variable is the interest rate. The LM curve shows the combinations of interest rates and levels of real income for which the money market is in equilibrium. It is an upward-sloping curve representing the role of finance and money. The initials LM stand for "Liquidity preference and Money supply equilibrium". As such, the LM function is the set of equilibrium points between the liquidity preference or Demand for Money function and the money supply function (as determined by banks and central banks).

Each point on the LM curve reflects a particular equilibrium situation in the money market equilibrium diagram, based on a particular level of income. In the money market equilibrium diagram, the liquidity preference function is simply the willingness to hold cash balances instead of securities. For this function, the nominal interest rate (on the vertical axis) is plotted against the quantity of cash balances (or liquidity), on the horizontal. The liquidity preference function is downward sloping. Two basic elements determine the quantity of cash balances demanded (liquidity preference) and therefore the position and slope of the function:

Deriving the LM Curve

The demand for real money balances depends on real income and the real interest rate. The real money supply depends on the nominal money supply and the price level. The combination of real interest rates and real income levels that result in equilibrium in the money market is called the LM curve. The *LM* curve shows all combinations of interest rate and levels of income at which the demand for and supply of money are equal. In other words, the *LM* schedule shows the combinations of interest rates and levels of income where the demand for money *(L)* and the supply of money *(M)* are equal such that it money market is in equilibrium. The *LM* curve is derived from the Keynesian formulation of liquidity preference schedules and the schedule of supply of money. A family of liquidity preference curves L_1Y_1, *L2* $Y_2$and $L_3L_3$is drawn at income levels of Rs.100 crores, Rs.200 crores and Rs.300 crores respectively in Figure 5.5 (A).

These curves together with the perfectly inelastic money supply curve *MQ* give us the *LM* curve. The *LM* curve consists of a series of points, each point representing an interest-income level at which the demand for money *(L)* equals the supply of money *(M)*. If the income level is Y_1 (Rs.100 crores), the demand for money (L_1Y_1) equals the money supply *(QM)* at interest rate R_1. At the Y_2 (Rs.200 crores) income level, the L_2Y_2 and the *QM* curves equal at R_2 interest rate. Similarly at the Y_3 (Rs.300 crores) income level, the L_3Y_3 and *QM* curves equal at R_3 interest rate. The supply of money, the liquidity preference, the level of income and the rate of interest provide data for

the LM curve shown in Figure 5.5 (B). Suppose the level of income is Y_1 (Rs.100 crores), as marked out on the income axis in Figure 5.5 (B). The income of Rs.100 crores generates a demand for money represented by the liquidity preference curve L_1Y_1. From the point E1 where the L_1Y_1 curve intersects the *MQ* curve, extend a dashed line horizontally to the right so as to meet the line drawn upward from Y_1 and K in Figure 5.5 (B). Points S and T can also be determined in similar manner. By connecting these points *K*, *S* and *T*, we get the *LM* curve. This curve relates different income levels to various interest rates.

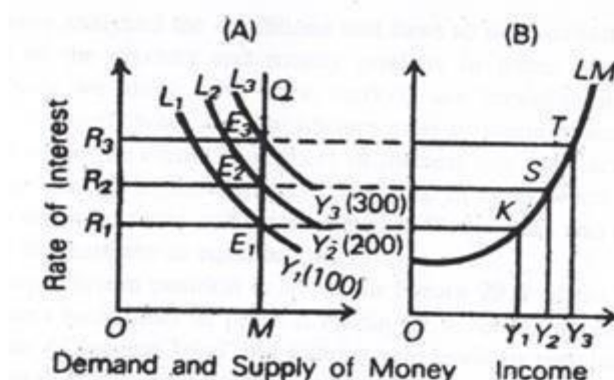


Figure 5.5
Derivation of LM Curve The Slope of the LM Curve

The *LM* curve slopes upward from left to right because given the supply of money, and increase in the level of income increases the demand for money which leads to higher rate of interest. This, in turn, reduces the demand for money and thus keeps the demand for money equal to the supply of money. The smaller the responsiveness of the demand for money to income, and the larger the responsiveness of the demand for money to the rate of interest, the flatter will be the *LM* curve. This means that a given change in income has a smaller effect on the interest rate.

The *LM* curve is steeper, if a given change in income has a larger effect on the rate of interest. In this situation, the responsiveness of the demand for money to income is larger and is smaller for the interest rate. If the demand for money is insensitive to the interest rate, the *LM* curve is vertical that is, it is perfectly inelastic. This is shown in Panel (B) of Figure 5.3 as the portion from T above on the *LM* curve. In this case, a large change in the interest rate is accompanied by almost no change in the level of income to maintain money market equilibrium. If the demand for money is very sensitive to the rate of interest, the *LM* curve is horizontal. This is shown by the portion of *LM* curve which starts from the vertical axis in Panel (B) of Figure .The *LM* curve is perfectly elastic in relation to the rate of interest. In other words, a small change in the interest rate is accompanied by a large change in the level of income to maintain the money market equilibrium. This portion of the *LM* curve at the extreme left is equivalent to the Keynesian liquidity trap, already explained in the

Keynes‘s theory of interest.

Shifts in the *LM* Curve

The *LM* function shifts to the right with the increase in the money supply given the demand for money, or due to the decrease in the demand for money, given the supply of money. If the central bank follows an expansionary monetary policy, it will buy securities in the open market. As a result, money supply with the public increases for both transactions and speculative purposes. This shifts the *LM* curve to the right.

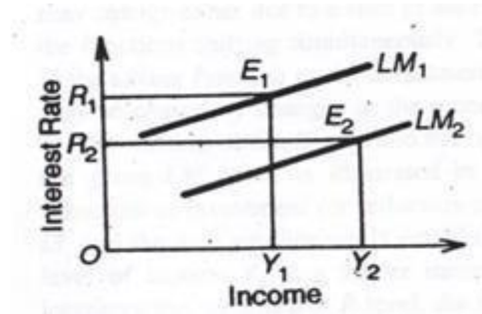


Figure 5.6

A decrease in the demand for money means a reduction in the quantity of balances demanded at each level of income and interest rate. Such a decrease in the demand for money balances creates an excess of the money supplied over the money demanded. This is equivalent to an increase in money supply in the economy which has the effect of shifting the *LM* curve to the right.

This is depicted in Figure 5.6. With the increase in the money supply the LM_1 curve shifts to the right as LM_2 which moves the economy to a new equilibrium point E_2. The increase in the money supply brings down the interest rate to R_2 in the money market. This, in turn, increases investment thereby raising the level of income to Y_2. Thus the effect of the increase in money supply is to shift the *LM* curve to the right and a new equilibrium is established at a lower interest rate, R_2 and higher income level, Y_2.

Contrariwise, a decrease in the money supply or an increase in the demand for money will shift the *LM* function to the left such that a new equilibrium is established at a higher interest rate and lower income level. This case can be explained by assuming LM_2 as the original curve.

GENERAL EQUILIBRIUM USING IS AND LM CURVE
General Equilibrium of Goods and Money Market

So far we have analysed the conditions that have to be satisfied for the general equilibrium of the product and money markets in terms of the *IS* and *LM* functions. The IS/LM model tool that demonstrates the relationship between interest rates and real output in the goods and

services market and the money market. The intersection of the IS and LM curves is the "General Equilibrium" where there is simultaneous equilibrium in both markets. Now we study how these markets are brought into simultaneous equilibrium. Equilibrium income and the real interest rate are determined by simultaneous equilibrium in the goods market and the money market. It is only when the equilibrium pairs of interest rate and income of the *IS* curve equal the equilibrium pairs of interest rate and income of the LM curve that the general equilibrium is established. In other words, when there is a single pair of interest rate and income level in the product and money markets that the two markets are in equilibrium.

Such an equilibrium position is shown in Figure where the IS and LM curves intersect each other at point *E* relating *Y* level of income to R interest rate. This pair of income level and interest rate leads to simultaneous equilibrium in the real or goods (saving investment) market and the money (demand and supply of money) market. This general equilibrium position persists at a point of time, given the price level. If there is any deviation from this equilibrium position, certain forces will act and react in such a manner that the equilibrium will be restored.

Consider point *A* on the *LM* curve where the money market is in equilibrium at Y_1 income level and R_2 interest rate. But the product market is not in equilibrium. In the product market, the interest rate $R_2$is lower. The product market can be in equilibrium at Y_1income level only at a higher interest rate R_1corresponding to point *B* on the *IS* curve. Consequently at point *A*, there is excess of investment over saving since point *A* lies to the left of the *IS* curve. The excess of I over S indicates excess demand for goods which raises the level of income.

As the level of income rises, the need for transactions purposes increases. In order to have more money for transactions purposes, people sell bonds. This tends to raise the interest rate. This moves the *LM*-equilibrium from point *A* upward to point *E* where a combination of higher interest rate *R* and higher income level *Y* exists. On the other hand, rising interest rate reduces investment and an increasing income rises saving. This helps to bring about the equality of *I* and *S* at point E where the general equilibrium is re-established by the equality of *IS* and *LM*.

The model can be presented as a graph of two intersecting lines in the first quadrant. The horizontal axis represents national income or real gross domestic product and is labeled Y. The vertical axis represents the real interest rate, i. Since this is a non-dynamic model, there is a fixed relationship between the nominal interest rate and the real interest rate (the former equals the latter plus the expected inflation rate which is exogenous in the short run); therefore variables such as money demand which actually depend on the nominal interest rate can equivalently be expressed as depending on the real interest rate. The point where these schedules intersect represents a short-run equilibrium in the real and monetary sectors (though not necessarily in

other sectors, such as labor markets): both the product market and the money market are in equilibrium. This equilibrium yields a unique combination of the interest rate and real GDP. Equilibrium income and the real interest rate are determined by simultaneous equilibrium in the goods market and the money market. Change in autonomous forces and the price level will lead to a shift in the IS or LM curve leading to a change in equilibrium income

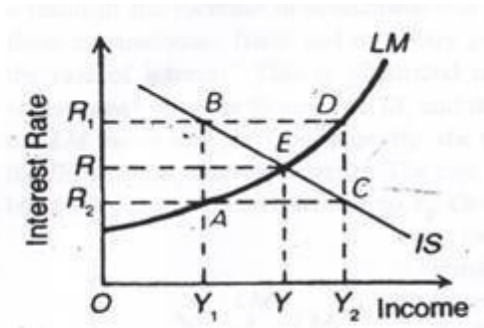


Figure 5.7

Now consider point *C* on the IS curve in Figure 5.7 where the product market is in equilibrium at R_2interest rate and Y_2income level. The money market is not in equilibrium. It can be in equilibrium at Y_2income level only at a higher interest rate R_1corresponding to point *D* on the *LM* curve. At point *C*, the demand for money (*L*) is greater than the supply of money (*M*) because point *C* reflects lower rate of interest R_2 than is required for the equality of *L* and *M*. Thus there is excess demand for money at R_2 interest rate, the excess demand for money leads people to sell bonds but there is less demand for bonds which tends to raise the interest rate. When the rate of interest begins to raise the product market is thrown into disequilibrium because investment falls. Falling investment leads to falling income which in turn reduces saving. This process ultimately brings the equilibrium of the product market when $I = S$ at point *E*. On the other hand, falling income reduces the transactions demand for money and ultimately brings about the equality of *LM* at point *E* where the equilibrium is re- established by the equality *IS* and *LM* curves, at *R* interest rate and *Y* income level.

CHANGES IN GENERAL EQUILIBRIUM

The general equilibrium of the product and money markets discussed above is based on the static equilibrium analysis. It stated from a point of disequilibrium and again reached the equilibrium point of the equality of *IS* and *LM* functions. But the general equilibrium combination of *Y* income level and *R* rate of interest may change either due to a shift in the *IS* function or the *LM* function, or by both the functions shifting simultaneously. The *IS* function may shift due to changes in the saving function or the investment function. The shifts in the *LM* function may be caused by changes in the money supply or liquidity preference.

The shifting of the IS curve to the right and the consequent

equilibrium with the given *LM* curve is illustrated in Figure 5.8. With the increase in the autonomous investment (or reduction in saving), the *IS* curve moves from *IS* to IS_1 and the new equilibrium is established at point E_1 which indicates a higher level of income Y_1 at a higher interest rate R_1. If the interest rate had not increased but remained at R level, the increase in investment would have raised income from *Y* to Y_2 level. But this much increase in income would not take place. This is because with the increase in income, the demand for money for transactions purposes will raise the interest rate to R_1 level where the *IS* and *LM* functions intersect at point E_1. Thus the expansionary effect of increase in investment is dampened by the rise in the interest rate and the income rises by less than the full multiplier.

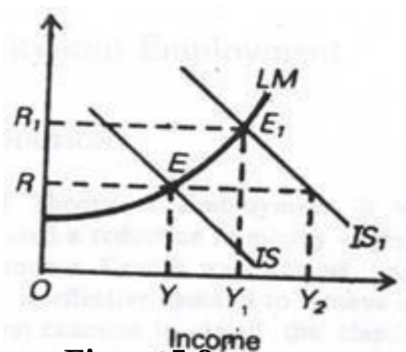


Figure 5.8

In the opposite case when investment falls or saving increases, the *IS* function will shift to the left and the equilibrium will be established at a lower level of income and interest rate. This situation has not been depicted in figure 5.8.

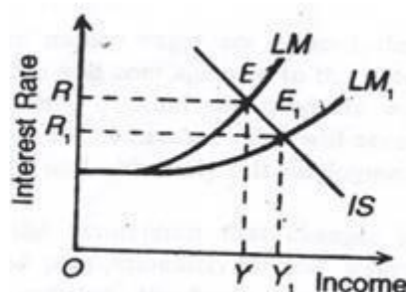


Figure 5.9

With the increase in the money supply the *LM* curve shifts to the right as LM_1 which moves the economy to a new equilibrium point E_1 where the IS curve intersects the LM_1 curve. The increase in the money supply brings down the interest rate R_1 in the money market. This, in turn, increases investment thereby raising the level of income top Y_1. Thus the effect of the increase in money supply is to shift the LM function to the right and a new equilibrium is established at a lower interest rate and higher income level. But how much income will rise as a result of an increase in the money supply depends on (1) how much the interest rate falls which in turn depends on the elasticity of

Notes

speculative demand for money, and (2) how much investment rises as a result of any given fall in the interest rate which in turn depends on the interest – elasticity of investment demand function. Contrariwise, a decrease in the money supply or an increase in the demand for money will shift the *LM* function to the left such that a new equilibrium is established at a higher interest rate and lower income level. This case has not been depicted in Figure 5.9.

Simultaneous Shifts in the IS and LM Functions

We have seen above that with the increase in investment when the *IS* curve shifts to the right, both the rate of interest and the level of the income tend to rise, given the *LM* curve. On the other hand, when an increase in money supply shifts the LM curve to the right, it lowers the rate of interest and raises the income level, given the IS curve.

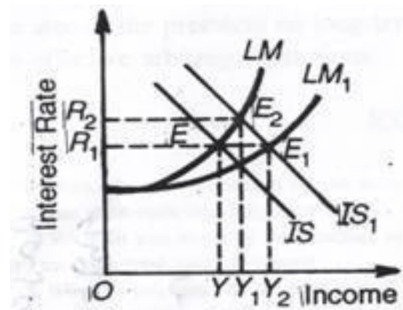


Figure 5.10

Now suppose both the *IS* and *LM* curves shift to the right simultaneously as a result of the increase in investment and money supply respectively. How will these expansionary fiscal and monetary policies affect the level of income and the rate of interest? This is illustrated in figure 5.10 where the increase in investment shifts the *IS* curve to IS_1 and the increase in the money supply shifts the *LM* curve to LM_1. Consequently, the new equilibrium position is E_1 where the IS_1 and LM_1 curves intersect. The rate of interest remains at the old level R_1, but the income increases from *Y* to Y_2. Given the money supply with no change in the *LM* curve, an increase in investment would raise both income and the rate of interest. This is shown in Figure 5.10 when the IS1 curve intersects the LM curve at E_2 and the interest rate rises to R2 and income to Y_1. But the rise in income is slowed down because of the rise in the interest rate. If the money supply increases by so much as to prevent the rise in the interest rate, the increase in income will be equal to the full expansionary effect of the rise in investment. This is depicted in Figure 5.10 by the shifting of the *LM* curve to the right as LM_1 which intersects the IS_1 curve at E_1. The income increases to Y_2 but the rate of interest remains at the same level R_1. So there has been full income expansionary effect of the increase in investment as a result of the simultaneous increase in money supply by just the amount necessary to prevent the rise in the interest rate.

Weaknesses or Limitations of ISLM Model

The popularity of ISLM model undoubtedly lies in its ability to present macroeconomics in terms of a model with exactly the same structure and mechanics as the model of supply and demand. Though the ISLM model is a fundamental model of macroeconomics, seldom do macroeconomists try to estimate the parameters of the model and use it to predict the future course of GDP. The fact that economists have not used the ISLM model in their attempts to numerically predict the effects of policy suggests that ISLM has weaknesses. Following are the major weaknesses of ISLM model.

1. The model is comparative static. Throughout it has been used to compare short run equilibrium positions and no attempt has been made to explain how the system moves from one equilibrium position to another.
2. The model assumes the absence of international trade. This assumption restricts its usefulness for the study of policy problems.
3. The model treats the price level as an exogenously given variable.
4. This model does not provide a detailed explanation of the working of the monetary system.
5. This model also ignores the time lags involved in the variables and the expectorations about future.
6. The ISLM model fails to consider the labour market.
7. The ISLM predicts the equilibrium can be at any level because it assumes, as does the simple income-expenditure model, a passive supply. Sellers produce whatever is demanded, and all adjustment to changes in demand are in the form of changes in output and none of the adjustment is in the form of changes in prices. Adjustment cannot be in the form of price changes because the price level does not enter the model. Since changes in prices are the primary way markets adjust in microeconomic theory, the failure of ISLM to say anything about prices is a serious weakness.
8. If meant as a short-run model, the model is severely limited because it does not incorporate the rate of inflation. Inflation creates a difference between real and nominal interest rates. The nominal rate is the visible rate that people pay and receive, and the real interest rate is what is happening in terms of purchasing power.

9. The distinction between real and nominal interest rates is important in ISLM because investment spending should respond to the real interest rate and money demand to the nominal interest rate. Investment will remain constant if the real interest rate does not change; change in nominal rates will not change investment if it does not change the real rate.6.

10. To keep the demand for money constant, the nominal interest rate must remain constant. When people hold cash balances for transactions; they are concerned with purchasing power. If all prices double, the amount of money people want to hold will double, but the amount of purchasing power they want will remain constant.

11. The interest rate is a cost of holding purchasing power. If the rate of inflation increases, and the rate of interest with it, holding money becomes more expensive and people will want to hold smaller amounts of purchasing power. Thinking of the demand for money in terms of purchasing power lets us ignore price level and is the key to seeing the effects of the rate of interest. It is the nominal rate, not the real rate that matters.

Given these serious weaknesses, a major reason behind the use of ISLM as a framework for so much macroeconomic thinking is that no other simple model gives as much insight. ISLM suggests that economic disturbances can arise in either the money market or the goods market, a conclusion that predates ISLM. Economists want a simple model that concludes this. Also, ISLM can be expanded and made more complex in an effort to overcome its limitations.

EFFECTIVENESS OF MONETARY AND FISCAL POLICIES IN IS-LM MODEL - MONETARY AND FISCAL POLICY

Monetary policy

Monetary policy is the exercise of the central bank‘s control over the money supply as an instrument to achieve the objectives of general economic policy. In other words, monetary policy is the process by which the monetary authority of a country controls the supply of money, often targeting a rate of interest for the purpose of promoting economic growth and stability. The official goals usually include relatively stable prices and low unemployment. Monetary theory provides insight into how to craft optimal monetary policy. It is referred to as either being expansionary or contractionary, where an expansionary policy increases the total supply of money in the economy more rapidly than usual, and contractionary policy expands the money supply more slowly than usual or even shrinks it. Expansionary policy is traditionally used to try to combat unemployment in a recession by lowering interest rates in the hope that easy credit will entice businesses into expanding. Contractionary policy is intended to slow inflation in hopes of avoiding the resulting

distortions and deterioration of asset values. Monetary policy differs from fiscal policy, which refers to taxation, government spending, and associated borrowing. Monetary policy rests on the relationship between the rates of interest in an economy, that is, the price at which money can be borrowed, and the total supply of money.

Monetary policy uses a variety of tools to control one or both of these, to influence outcomes like economic growth, inflation, exchange rates with other currencies and unemployment. Where currency is under a monopoly of issuance, or where there is a regulated system of issuing currency through banks which are tied to a central bank, the monetary authority has the ability to alter the money supply and thus influence the interest rate (to achieve policy goals). The beginning of monetary policy as such comes from the late 19th century, where it was used to maintain the gold standard. A policy is referred to as contractionary if it reduces the size of the money supply or increases it only slowly, or if it raises the interest rate. An expansionary policy increases the size of the money supply more rapidly, or decreases the interest rate. Furthermore, monetary policies are described as follows: accommodative, if the interest rate set by the central monetary authority is intended to create economic growth; neutral, if it is intended neither to create growth nor combat inflation; or tight if intended to reduce inflation.

There are several monetary policy tools available to achieve these ends: increasing interest rates by fiat; reducing the monetary base; and increasing reserve requirements. All have the effect of contracting the money supply; and, if reversed, expand the money supply. Since the 1970s, monetary policy has generally been formed separately from fiscal policy. Even prior to the 1970s, the Bretton Woods system still ensured that most nations would form the two policies separately.

Fiscal Policy

In economics, fiscal policy is the use of government expenditure and revenue collection (taxation) to influence the economy. The two main instruments of fiscal policy are government expenditure and taxation. Changes in the level and composition of taxation and government spending can impact Aggregate demand, the distribution of income, the pattern of resource allocation and the level of economic activity in the economy. Thus, Fiscal policy refers to the use of the government budget to influence the first of these: economic activity. Governments use fiscal policy to influence the level of aggregate demand in the economy, in an effort to achieve economic objectives of price stability, full employment, and economic growth. Keynesian economics suggests that increasing government spending and decreasing tax rates are the best ways to stimulate aggregate demand. This can be used in times of recession or low economic activity as an essential tool for building the framework for strong economic growth and working towards full employment. Governments can use a budget surplus to do two things: to slow the pace of strong economic growth and to stabilize

prices when inflation is too high. Keynesian theory posits that removing spending from the economy will reduce levels of aggregate demand and contract the economy, thus stabilizing prices.

Economists debate the effectiveness of fiscal stimulus. The argument mostly centers on crowding out, a phenomenon where government borrowing leads to higher interest rates that offset the stimulative impact of spending. When the government runs a budget deficit, funds will need to come from public borrowing (the issue of government bonds). When governments fund a deficit with the issuing of government bonds, interest rates can increase across the market, because government borrowing creates higher demand for credit in the financial markets. This causes a lower aggregate demand for goodsand services, contrary to the objective of a fiscal stimulus. Neoclassical economists generally emphasize crowding out while Keynesians argue that fiscal policy can still be effective especially in a liquidity trap where, they argue, crowding out is minimal. Some classical and neoclassical economists argue that crowding out completely negates any fiscal stimulus; this is known as the Treasury View, which Keynesian economics rejects. In the classical view, the expansionary fiscal policy also decreases net exports, which has a mitigating effect on national output and income. When government borrowing increases interest rates it attracts foreign capital from foreign investors. This is because, all other things being equal, the bonds issued from a country executing expansionary fiscal policy now offer a higher rate of return. Fiscal policy is the exercise of the government‘s control over public spending and tax collections for the general economic policy.

Now we will use ISLM model for examining the effectiveness of macro economic policies. The IS-LM model, as a vehicle for policy analysis, has a substantial influence on the policy makers and academicians. Like the developed countries, the IS-LM framework remains important for students to learn in the developing countries because of the benefits it offers in clarifying their thinking about the implications for practical policy issues. Monetary policy implies the variations in the supply of money brought about by the central bank of a country with a view to achieve certain economic goals. The fiscal policy, on the other hand, means the use of government spending and taxes as the instruments for the achievement of those very goals. In the present discussion, we shall however, restrict ourselves only to one dominant goal of economic policy, viz. raising the level of real income. The relative effectiveness of the monetary and fiscal policies in raising the level of real income and influencing the rate of interest can be assessed through the *IS-LM* general equilibrium framework.

We have already discussed that the LM function, given a fixed supply of money, slopes upwards from left to right. But the entire LM function can be divided into three distinct ranges – the Keynesian range, the classical range and the intermediate range.

At one extreme, the LM function is perfectly elastic at the

minimum possible rate of interest. The speculative demand for money is perfectly elastic at this rate of interest. The asset holders are ready to exchange securities for cash at the existing security price even up to an unlimited extent. This is what we call the liquidity trap. This range may be denoted as the Keynesian range, since in Keynes'General Theory, this particular situation was greatly emphasized and it is within this range that the monetary policy becomes completely ineffective.

On the other extreme, at some very high rate of interest, the demand for money for idle balances becomes zero. The bond-holders do not anticipate any fall in the asset prices and they prefer to hold only securities and no idle cash. In this section, the LM function is perfectly inelastic and this range of LM function is known as the classical range. In between these two extremes of the pure classical and pure Keynesian ranges, there is an intermediate range of LM function with varying degrees of elasticity. This intermediate range is a blend of the pure classical and pure Keynesian ranges.

The relative effectiveness of monetary and fiscal policies over these ranges can be analysed with the help of Fig. 5.11.

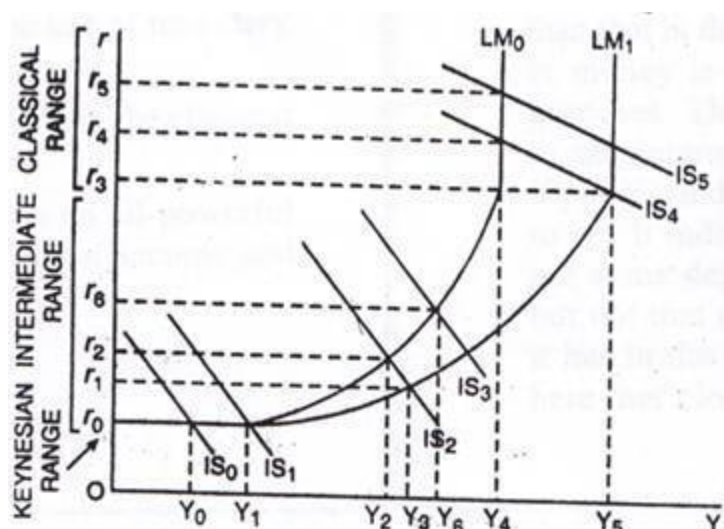


Figure 5.11

The Keynesian Range: The system in this range is initially in equilibrium at Y0 income and $r_0$rate of interest as shown in fig. 5.11. This equilibrium is determined at a low level of income and at the minimum possible rate of interest. Since the LM function here is perfectly interest-elastic, this denotes the state of liquidity trap. As the monetary authority buys securities, these are exchanged by the security holders for cash at the existing prices of securities. Therefore, by whatever amount the supply of money is increased, the rate of interest does not fall below r_0 rate of interest. An important policy implication is that the monetary policy becomes completely ineffective here either in raising the level of income or in lowering the rate of interest so that the aggregate demand function cannot be raised through monetary variations. The belief that the economic system was in a state of liquidity trap during the early 1930's led Keynes to suggest unorthodox fiscal prescriptions. If the level of income and rate of

interest remain firmly anchored at a low point, the only way out is to raise the aggregate demand or IS function through fiscal measures like public spending; tax reduction and public works. As these measures shift the IS function from IS_0 to IS_1, the level of income increases from Y_0 to Y_1, although the rate of interest continues to remain pegged at the minimum level.

The Classical Range:- A situation quite the opposite of the one just explained above prevails, if the IS curve intersects the LM curve at a point where the latter is perfectly inelastic. In Fig. 5.11., IS_4 intersects LM0 at its inelastic part so that equilibrium income is Y_4 and rate of interest r_4. If there is an increase in the supply of money through open market purchase of securities by the central bank, the security holders can be induced to dispose of the securities in exchange of cash only at higher security prices or at a lower rate of interest. As the supply of money is raised, LM function shifts from LM_0 to LM_1 and IS_4 intersects LM_1 at its inelastic part so that the equilibrium is determined at a higher level of income and the rate of interest is pushed down to r_3. Since the asset-holders are not inclined to hold any amount of cash balances, the entire amount of money is to be used up for transactions. It follows that in the classical range, the simple quantity theory of money holds valid and Y rises in proportion to the quantity of money.

In this range, it is thus obvious that the monetary policy is greatly effective. An increase in the money supply is capable of raising the equilibrium level of income. It can also bring down the rate of interest. In sharp contrast to the Keynesian range, the fiscal policy in the classical range is completely ineffective as well as unnecessary. Given LM_0 curve and with an increase in the IS function from IS_4, to IS_5 as a result of fiscal measures, the equilibrium income remains fixed at Y_4 but the rate of interest increases up to r_5 which may choke off the private spending by an amount equivalent to an increase in public spending to leave the aggregate demand unchanged. Thus fiscal policy becomes completely unnecessary in this range. It is also ineffective because an increase in income and output without the use of monetary policy cannot be possible.

The Intermediate Range: In between the two extremes of pure Keynesian and pure Classical ranges,there is an intermediate range showing varying levels of income and rates of interest. IS_2 curve intersects LM_0, as shown in Fig. 5.11, in this range to determine Y_2 income and r_2 rate of interest. An increase in the supply of money shifts the LM curve from LM_0 to LM_1. In the Keynesian range, this increase in M causes no change in Y and r. In the classical range, the increase in M brings about an increase in Y and a fall in the rate of interest. In the intermediate range, an increase in M is partly absorbed in transactions balances and partly in the speculative balances. The level of income does rise in this range but by an amount less than that in the classical range where the increase in money is utilized fully for the transactions purposes.

The shift of LM from LM_0 to LM_1 in the intermediate range raises income from Y_2 to Y_3 and lowers the rate of interest from r_2 to r_1. It indicates that the monetary policy has got some degree of effectiveness in this range but not that overwhelming effectiveness which it has in the classical range. We may conclude here that closer the equilibrium intersection to the classical range, relatively greater is the degree of effectiveness of the monetary policy and closer the intersection to the pure Keynesian range, relatively less effective does it become.

The fiscal policy too has some degree of effectiveness in this range. If the fiscal measures like increased public spending induce a shift in the IS function from IS_2 to IS_3, assuming a fixed supply of money, described by LM_0, the level of income as well as the rate of interest may choke off a part of the private spending so that the increase in income is not as large as it was otherwise possible. A shift in LM function from LM_0 to LM_1 facilitates equilibrium at a rate of interest lower than r_2 and the level of income is also higher than the level induced by the fiscal measures only. A like the monetary policy, the degree of effectiveness of fiscal policy also varies over the different parts of the intermediate range. Closer is the intersection between IS and LM to the Keynesian range, relatively greater is the degree of effectiveness of the fiscal policy and closer is the equilibrium to the classical range, relatively lesser is the degree of its effectiveness.

In the intermediate range, both monetary and fiscal policies have some degree of effectiveness but their relative effectiveness depends to a great extent upon the elasticity of the IS function. If in this range, IS function is more elastic, as described by IS_2 in Fig. 5.11, the increase in money supply will raise the level of income more than it lowers the rate of interest. But Keynes has maintained that IS function is relatively less interest-elastic because both S and I functions are relatively less interest-elastic. Given a less elastic IS_2 curve, a monetary expansion primarily lowers the rate of interest. Its effect on the level of income is very little. Thus if the IS curve is inelastic, greater reliance has to be placed in this range upon the fiscal measures in order to raise the level of income.

Although, both monetary and fiscal policies have varying degrees of effectiveness in the intermediate range, the relative effectiveness in the intermediate range depends in large part on the elasticity of the IS function. If the IS function is the inelastic, monetary policy can do very little to raise the level of income, even in the intermediate range. Fiscal policy alone is effective in such a situation.

13.2.Check your progress Questions.

Check your progress-1

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

1.What is Monetary policy?

Check your progress-2

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

1.Define fiscal policy?

13.3.Answer to check your progress Questions.

1. Monetary policy is the exercise of the central bank‘s control over the money supply as an instrument to achieve the objectives of general economic policy. In other words, monetary policy is the process by which the monetary authority of a country controls the supply of money, often targeting a rate of interest for the purpose of promoting economic growth and stability

2. In economics, fiscal policy is the use of government expenditure and revenue collection (taxation) to influence the economy. The two main instruments of fiscal policy are government expenditure and taxation.

13.4..Summary

13.5.Key words

Monetary policy, fiscal policy

13.6. Self Assessment Questions and Exercises.

Short Answer Questions

1.What is monetary policy?

2.What is Fiscal policy?

Long answer Questions.

1.Explain Macro Economic Model: Contribution of Hicks, Hanson: IS-LM Diagram.

2.Explain IS-LM Diagram.

13.7.Further Readings.

Seth, M.L. (1999), **"Macro Economics",** Lakshmi Narayan Agarwal Publishers, New Delhi.

Notes

UNIT-14: MACRO ECONOMIC POLICY

Structure:

14.1. Macro Economic Policy: Meaning

Microeconomics and macroeconomics—the two major divisions of economics—have different objectives to be pursued.

The key microeconomic goals are the efficient use of resources that are employed and the efficient distribution of output.

These two goals of microeconomics are encapsulated as 'efficiency' and 'equity'.

But macroeconomic goals are quite different because the overall response of the economy must not match with the individual units. As macroeconomics looks at the whole, its objectives are aggregative in character. In other words, because of different level of aggregation, these two branches of economics focuses on different economic objectives.

1. Macroeconomic Policy Objectives:
The macroeconomic policy objectives are the following:

(i) Full employment,

(ii) Price stability,

(iii) Economic growth,

(iv) Balance of payments equilibrium and exchange rate stability, and

Notes

(v) Social objectives.

14.2. Objectives and Importance of Macro Economic Policy.

(i) Full employment:

Performance of any government is judged in terms of goals of achieving full employment and price stability. These two may be called the key indicators of health of an economy. In other words, modern governments aim at reducing both unemployment and inflation rates.

Unemployment refers to involuntary idleness of mainly labour force and other productive resources. Unemployment (of labour) is closely related to the economy's aggregate output. Higher the unemployment rate, greater the divergence between actual aggregate output (or GNP/CDP) and potential output. So, one of the objectives of macroeconomic policy is to ensure full employment.

The objective of full employment became uppermost amongst the policymakers in the era of Great Depression when unemployment rate in all the countries except the then socialist country, the USSR, rose to a great height. It may be noted here that a free enterprise capitalist economy always exhibits full employment.

But, Keynes said that the goal of full employment may be a desirable one but impossible to achieve. Full employment, thus, does not mean that nobody is unemployed. Even if 4 or 5 p.c. of the total population remain unemployed, the country is said to be fully employed. Full employment, though theoretically conceivable, is difficult to attain in a market-driven economy. In view of this, full employment objective is often translated into 'high employment' objective. This goal is desirable indeed, but 'how high' should it be? One author has given an answer in the following way; "The goal for high employment should therefore be not to seek an unemployment level of zero, but rather a level of above zero consistent with full employment at which the demand for labour equals the supply of labour. This level is called the natural rate of unemployment."

(ii) Price stability:

No longer the attainment of full employment is considered as a macroeconomic goal. The emphasis has shifted to price stability. By price stability we must not mean an unchanging price level over time. Not necessarily, price increase is unwelcome, particularly if it is restricted within a reasonable limit. In other words, price fluctuations of a larger degree are always unwelcome.

However, it is difficult again to define the permissible or reasonable rate of inflation. But sustained increase in price level as well as a falling price level produce destabilising effects on the economy. Therefore, one of the objectives of macroeconomic policy is to ensure (relative) price level stability. This goal prevents not only economic fluctuations but also helps in the attainment of a steady growth of an economy.

(iii) Economic growth:

Economic growth in a market economy is never steady. These economies experience ups and downs in their performance. This objective became uppermost in the period following the World War II (1939-45). Economists call such ups and downs in the economic performance as trade cycle/business cycle. In the short run such fluctuations may exhibit depressions or prosperity (boom).

One of the important benchmarks to measure the performance of an economy is the rate of increase in output over a period of time. There are three major' sources of economic growth, viz. (i) the growth of the labour force, (ii) capital formation, and (iii) technological progress. A country seeks to achieve higher economic growth over a long period so that the standards of living or the quality of life of people, on an average, improve. It may be noted here that while talking about higher economic growth, we take into account general, social and environmental factors so that the needs of people of both present generations and future generations can be met.

However, promotion of higher economic growth is often hampered by short run fluctuations in aggregate output. In other words, one finds a conflict between the objectives of economic growth and economic stability (in prices). In view of this conflict, it is said that macroeconomic policy should promote economic growth with reasonable price stability.

(iv) Balance of payments equilibrium and exchange rate stability:

From a macro- economic point of view, one can show that an international transaction differs from domestic transaction in terms of (foreign) currency exchange. Over a period of time, all countries aim at balanced flow of goods, services and assets into and out of the country. Whenever this happens, total international monetary reserves are viewed as stable.

If a country's exports exceed imports, it then experiences a balance of payments surplus or accumulation of reserves, like gold and foreign currency. When the country loses reserves, it experiences balance of payments deficit (or imports exceed exports). However, depletion of reserves reflects the unhealthy performance of an economy and thus creates various problems. That is why every country aims at building substantial volume of foreign exchange reserves.

Anyway, the accumulation of foreign exchange reserves is largely conditioned by the exchange rate the rate at which one currency is exchanged for another currency to carry out international transactions. The foreign exchange rate should be stable as far as possible. This is what one may call it external stability in price.

External instability in prices hampers the smooth flow of goods and services between nations. It also erodes the confidence of currency. However, maintenance of external stability is no longer considered as the macroeconomic policy objective as well as macroeconomic policy instrument.

Notes

It is, however, because of growing inter- connectedness and interdependence between different nations in the globalised world, the task of fulfilling this macroeconomic policy objective has become more problematic.

(v) Social objectives:

Monetary policy attempts to stabilise aggregate demand in the economy by influencing the availability or price of money, i.e., the rate of interest, in an economy.

Monetary policy may be defined as a policy employing the central bank's control of the supply of money as an instrument for achieving the macroeconomic goals.

Fiscal policy, on the other hand, aims at influencing aggregate demand by altering tax- expenditure-debt programme of the government. The credit for using this kind of fiscal policy in the 1930s goes to J.M. Keynes who discredited the monetary policy as a means of attaining some of the macro- economic goals—such as the goal of full employment.

As fiscal policy has come into scrutiny in terms of its effectiveness in achieving the desired macroeconomic objectives, the same is true about the monetary policy. One can see several rounds of ups and downs in the effectiveness of both these policy instruments consequent upon criticisms and counter- criticisms in their theoretical foundations.

It may be pointed out here that as there are conflicts among different macroeconomic goals, policymakers are in a dilemma in the sense that neither of the policies can achieve desired goals. Hence the need for additional policy measures like income policy, price control, etc. Further, while the objectives represent economic, social and political value judgements they do not normally enter the mainstream economic analysis. Ultimately, policymakers and bureaucrats are blamed as troubleshooters.

14.3.Check your progress Questions.

Check your progress-1

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of tl unit.

1.What is Macro Economic Policy?

Check your progress-1

Note: a).Write your answer in the space given below

b)Compare your answer with those given at the end of the unit.

1.What is Economic growth?

14.4.Answer to check your progress Questions.

Notes

1. Macroeconomic goals are quite different because the overall response of the economy must not match with the individual units. As macroeconomics looks at the whole, its objectives are aggregative in character. In other words, because of different level of aggregation, these two branches of economics focuses on different economic objectives.

2. Economic growth in a market economy is never steady. These economies experience ups and downs in their performance.

14.5.Summary

In this unit you have leant about the meaning, objectives and importance of macro economic policy. This knowledge would make you understand what in macro economic policy and how it can be practiced at macro level. the content such as objectives and importance would have made you to distinguish these activities from the macro economic policy and you must have learnt about the importance and its objectives in the macro economic policy.

14.6.Key words

Price stability, Exchange Rate Stability

14.7. Self Assessment Questions and Exercises.

Short Answer Questions

1.What is Macro Economics Policy?

2.What is price stability?

Long answer Questions.

1.Describe the Macro Economics Policy.

2.Explain Objectives and Importance of Macro Economic Policy.

14.8.Further Readings.

Shapiro, Edward (2008), **"Macro Economic Analysis",** Galyotia Publications, New Delhi.